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PRESENT STATUS OF PEDIATRICS

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"We can not stay amid the ruins."—EMERSON

PRESENT STATUS OF PEDIATRICS

EDITED BY

BENJAMIN F. BAILEY, M. D., LINCOLN, NEBRASKA

ALLISON CLOKEY, M. D., LOUISVILLE, KENTUCKY

1896

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PREFACE.

In presenting this book to the profession, we have not attempted to prepare a text-book or a complete reference book, but simply what its title indicates—a *resumé* of the present status of pediatrics. We believe that this subject, which was so dear to the fathers of our school, and which has been in our practice the entering wedge for many a conversion to our tenets and beliefs, has been of late years sadly neglected. Through this little volume it is our desire to arouse fresh interest in Pediatrics, and to take this opportunity to urge every member of the homœopathic profession to put himself in close touch with the work by placing upon his shelves, not bye-and-bye, but immediately, all of the recent homœopathic works upon diseases of children. It is due to those who have done earnest and honest work in this line that they be rewarded by financial appreciation. Fisher's Diseases of Children is a complete and thoroughly praiseworthy work, and no practitioner can complete his library on modern pediatrics without it. Tooker on the same subject is a fit companion piece. If we are successful in bringing to the authors and publishers of our late works on pediatrics renewed recognition, and in awakening in our societies in general, and

in the American Institute in particular, an enthusiasm in the study of the diseases of the babes of the world, we shall feel that our work is repaid and that we have at least done our little toward a fitting memorial this centennial year. The incentives that have been ours during this work have, we believe, belonged in truth to each contributor to this book, and we wish here to publicly and most gratefully thank each contributor—all busy men—for the untiring help and courtesy that have at all times been ours.

THE EDITORS.

LINCOLN, NEBRASKA,
JUNE 10, 1896.

CHAPTER I.

THE NEW-BORN AND INFANT DIET.

BY LEMUEL C. GROSVENOR, M. D., PROFESSOR OF OBSTETRICS AND SANITARY SCIENCE, CHICAGO HOMŒOPATHIC MEDICAL COLLEGE, CHICAGO.

First Toilet.—The first thing which interests us, even before the cord is severed, is baby's first toilet. On coming into the world baby is covered with four substances,—amniotic fluid, the mucous lubricants of the vagina, blood, and *vernix caseosa*. The first three of these are readily removed, while wet, with a soft towel, and then the baby is oiled with warm sweet oil to soften the wax. After the oil has remained on two or three minutes the fourth coat is easily removed, leaving the baby with a soft, clean, velvety skin, no soap or water having been used. The old teaching that baby should lie about for half an hour and all these substances allowed to dry on, seems to us a pernicious one.

To-day the dressing for the cord is absorbent cotton rather than the historic burnt linen of former years. This makes a soft, kind, antiseptic pad for the navel. The band should be as simple as possible —a single thickness of flannel, without hems, embroidery, or hand painting. Remember always that the only purpose of this bandage is to retain the

navel dressing, and it is to be thrown away when the cord comes off. To-day we recognize the fact that the band of the pinning blanket and skirt, together with the navel bandage, are the fruitful causes of ruptures, the teachings of the past to the contrary notwithstanding.

Later Toilet.—The old diaper, nearly a yard square and folded so many times, is a cruel one to baby, overheating the hips and the kidneys, and retaining so closely the liquid and solid excreta, with their emanations, as to cause frequent excoriations of the parts. The new double diaper, eighteen inches square and ten inches square, gives ample protection and is much more kindly.

Among the more intelligent mothers and physicians, the chemise, pinning blanket, and the skirts with their bands are discarded and in their place comes the beautiful princess cut Gertrude suit. This leaves all the organs in the body as free to play their part as in the colt or kitten. Probably 40,000 babies are in this suit to-day. No one can educate the young mothers of the land in these better ways as well as the physician. The wide-awake, up-to-date doctor, rather than grandmother, should be consulted by the young mother in these matters. This simple first toilet being completed, the baby should be laid away in a warm nest for rest.

Asphyxia.—Should baby be born asphyxiated, from long impaction in the straits, perhaps no one thing is so promptly available to restore the child as the hot bath. If the cord has not ceased beating, this bath should be given before severing the cord.

This is accomplished by placing the pan between the mother's knees, and placing the baby all over in the bath as hot as it can be borne, every few moments adding more hot water. Here the baby is handled, expanding and compressing the chest to imitate respiration. This hot bath keeps the blood limpid, the body warm, and we are soon rewarded by seeing our baby revive. In desperate cases the finger may be lubricated, and the baby's rectum dilated therewith—this will often provoke respiration in seemingly hopeless cases.

Ophthalmia of new-born infants may be prevented by immediately making the eyes absolutely clean by a warm solution of boracic acid. Remember always that a prolific cause of this disease is the poisonous vaginal secretions to which the eyes are exposed in their passage into the world. The cleansing antiseptic vaginal douche in the early part of the labor will save much after trouble in this direction.

Malformations.—Early in the case the doctor should examine the baby from head to feet for any evidences of malformation or disease. An occluded rectum, a hypospadias, a spina-bifida, a harelip, or cleft palate, pluro or syndactylism should not escape his notice. Many of the minor abnormalities may be corrected without the knowledge of the mother.

Diet.—Perhaps no one thing is doing so much to prevent diarrhœa, dysentery, and summer complaint, which so mark the first two years of baby life, as regular feeding. To-day we know that the old teaching, "little and often," is a blunder, and the advanced physician gives to the young mother valuable lessons

in this regard. The young mother is given this formula,—nurse the baby every three hours during the day and once in the night for the first three months, then every four hours, and never again in the night for the balance of the nursing period. Some of the beautiful results of this better way are found to be these,—colics disappear entirely, vomiting ceases, baby has two stools a day instead of six, stools are wholesome and well digested; there is no cholera infantum next summer and no "teething" by and by. This regular habit should be instituted the first day and not wait till the third day when the milk comes. Why should we tease the baby or annoy the mother before the milk comes? For three excellent reasons. In the first place, the baby is learning how and getting used to nursing; secondly, early nursing provokes uterine contractions and prevents subinvolution of the uterus; third, the breasts contain, right at first, a few drops of cholostrum, which act as a cathartic for baby. In this matter of regular nursing do not consult the baby in the least, ask the clock. Experience proves that these regularly fed babies are larger, healthier, happier, than those who eat when they want it, and hang on the breast all night. Crying for food ceases entirely, unless you go past the regular hour. Regular nursing and the new dress have done very much to reduce infantile mortality.

Bathing.—The daily full bath, immersing the baby all over in the warm water, washing it from head to foot without soap, drying it in a warm receiving blanket, dressing it quickly in the warm Gertrude suit, is another great advance over old methods. It

is easily done in seven minutes, instead of forty-five minutes the old way. This bath should occur on an empty stomach, before nursing rather than after. A good time is just before the second nursing of the day. This kindly, soothing, full bath makes baby contented and happy for all day.

Sleep, that boon to baby life, is to-day receiving much more attention than formerly. Regular habits here are worth as much as in feeding. Then the Creator's two great conditions of rest the world over, darkness and quiet, should be observed. A simple couch, without a pillow, light covering, and pure air are conditions of sweetest rest.

The Care of the Mother.—Many babies die every year from nursing tired, weary, worn out mothers. This fact is coming to be recognized by the best physicians, and as a result more attention is being given to the mother with reference to her ability to make good milk. She is taught that she cannot make a quart and a half of Jersey milk every day without something to make it of. She is encouraged to take three good meals a day, and four little refreshments between. These come the first thing in the morning, the middle of the forenoon, the middle of the afternoon, and on retiring. She is taught to rest abundantly, and that rested milk makes baby contented and happy, while tired milk makes baby cross and irritable,—therefore she, as a nursing mother, should seek an abundance of sleep. She lies down to nurse her baby, lets the baby lie under her arm and not on it, gives a half hour to each nursing, and drops to sleep while baby nurses. This is an exceedingly con-

servative habit as far as the mother's health and beauty are concerned. It rests the organs in the pelvic basket, and keeps her young, rested, and light-hearted. She takes her daily outing in the fresh air, in the sunshine and under the blue sky. She cultivates happy moods and tenses, remembering always that sweet content and happy thoughts improve the quality of the milk, while depressions, passions, envy, jealousy, suspicion, hatred, ill-will, and especially ill-temper, poison baby's milk.

Sometimes it happens that the mother is not a "milker;" perhaps she comes of a race who are not good nursers; perhaps the breasts in the years from sixteen to twenty developed under the pressure of the corset and so made an imperfect development; perhaps former mammary abscess has destroyed the breast; perhaps an unwise nurse, by neglect or inattention to duty, has dissipated it. This failure, from whatever cause, necessitates artificial feeding, and the great question now is—what shall we feed the baby.

Artificial Feeding.—Many of the best physicians regard sterilized milk, properly diluted, as the most natural of all foreign foods, while a very large class of experienced men prefer some artificial food, such as *Mellin's Food* or *Lacto-preparata.* No one food suits every stomach, and sometimes we have to feel our way till we find one that suits. In artificial feeding even greater strictness with regard to keeping regular hours should be observed. If during the hot weather of summer or during fevers baby should fret between his meal times, a drink of pure water will

often quiet him. Whatever foods are given should be given from the bottle and not from the mug, this is a slower, neater, and easier way to feed the baby, as well as more natural. The flat cone bottle and the black or red Davidson nipple are the ones most suited to the purpose. The bottle with a rubber tube is a menace to baby's life, since it is so difficult to keep clean.

So to-day, with the wise physician, much attention is given to those conditions and habits in the nursery which prevent rather than cure disease. To eliminate the terror and drudgery of motherhood and throw around it a halo of loveliness and joy should be the high ambition of every good physician.

CHAPTER II.

DIATHETIC DISEASES.

BY JOSEPH P. COBB, M. D., PROFESSOR OF PEDIATRICS, HAHNEMANN MEDICAL COLLEGE, CHICAGO.

RHACHITIS.—Rhachitis is a disease of infancy and early childhood; its most marked symptoms appear between the sixth month and the second year; it may occur at any age and is occasionally congenital; it is closely associated with impaired nutrition and unhygienic surroundings. In this country it is comparatively rarely observed outside of large cities, where the poor and destitute are crowded together in imperfectly ventilated, poorly lighted, and filthily kept tenements, and among those families which cannot obtain suitable food or which do not appreciate the value of proper food for children. Infants nursed by a mother who, from any cause, either constitutional or dietetic, can furnish only a poor, watery, imperfectly organized milk may become rhachitic. Such mothers are usually anæmic to a high degree and their milk when examined has been found lacking in cream and soluble albumen; it contains relatively a greater proportion of saline ingredients than normal milk, but the different salts do not appear in their proper rela-

tive proportions; the insoluble albumin, caseine, approaching nearest to its normal amount. Though many mothers furnish imperfect milk, the majority of nurslings manage to escape rhachitis in any pronounced type until they are weaned; where the mother's nutrition is poor this period is apt to occur early in their infancy.

Babies fed upon artificially prepared food from the beginning are the ones who are more prone to develop rhachitis early, and yet they seldom show the marked type until after the sixth month. Nature seems, in the case of many of them, to be able to make an obstinate fight and only to yield when persistently starved out. It appears to be a matter of almost universal agreement, among those whose opportunities for observation among these classes have been the most extensive, that it is the persistent lack of fat—the proper kind of fat—and the lack of the proper saline ingredients in the proper proportions in the infant's food, which at least makes it possible for the disease to develop. The majority of the manufactured foods of the market, and especially those which are intended to be prepared without the addition of fresh milk, present these very conditions; they contain far too little fat, and the fat that is present is not animal fat; they may contain an excessive proportion of saline matter (which in itself is a fault), but the salts have not been organized by animal vitalities and materially differ chemically from the salts of the milk. Among the better classes, where unhygienic surroundings are not a prominent etiological factor, the food of the child who has developed rhachitis is almost invariably

found to have been one of the fat deficient and starch beridden trade compounds; a compound which claims to contain all of the nutritious ingredients of milk and various cereals in an easily digestible form and which the manufacturer asserts is a "perfect substitute for mother's milk." This observation points its own moral, viz., that the proper food for infants is milk. It is a question whether unhygienic surroundings alone ever produce rhachitis. Infants and children, like young plants, cannot thrive without sunshine; and like plants, when grown in an atmosphere vitiated by poisonous gases and deprived of sunshine, become sickly, stunted specimens of their kind. These influences, however, though potent factors in developing rhachitis, do not, in the absence of imperfect foods, produce typical examples of the disease.

Anatomical Changes.—The deviation from the normal standard of development belonging to rhachitis may be observed in any tissue. It is true that it is more apparent in the osseous system, and for this reason the bony changes have received more attention. The changes wrought in other tissues may, however, be even more serious and affect the child's expectancy even more deeply than those of the bones. Too little attention has been given to the deviation from the normal standard of the blood. Anæmia in some form is usually a part of the rhachitic development, and carries with it its pernicious blood composition. The number of red-blood corpuscles (*erythrocytes*) is always below the normal proportion and the percentage of *hæmoglobin* will vary in the same proportion. The white corpuscles (*leucocytes*) are also

at variance with the normal condition; they may be simply deficient in number or deficient in development; in pronounced cases they are abnormal in both of these respects. While these observations are true in varying degrees for all rhachitic children, in the case of those presenting splenic enlargements it becomes a more pronounced factor for evil. In such cases the number of *erythrocytes* and the percentage of *hæmoglobin* have been found less than one-half the normal proportion, while more than three-fourths of the *leucocytes* have not been developed up to a good working standard. The specific gravity of the blood is below normal and falls in direct ratio to the advance of the disease. This is a condition of the disease, it is true, but it is a pathological difference and one that affects very materially the ability of the organism to do its ordinary work. During infancy the blood of all tissues is taxed the most by extra demands for growth and development, and to its inability to meet these demands may be ascribed in large part the deficiencies of other tissues. There is not space in an article of this character to dwell *in extenso* upon all of the varied deformities presented by a typically rhachitic child. In reference to the bony changes I wish to make this observation, viz., that rarely does any one child present all of the possible osseous deformities or peculiarities. The *rhachitic rosary* is often absent; so are any marked epiphyseal enlargements. Craniotabes are only present in extreme cases, but cranial bossa with a peculiar cranial contour are in some degree usually present. While the brachycephalic cranium with its flat top box-like sides, its

square appearance and overhanging forehead is the more common type, we should remember that another type with an exaggeratedly long antero-posterior diameter is equally as characteristic. In this class the craniotabes are not usually to be observed, but the bossa, flat top, and overhanging forehead are present. Ossification is a twofold process which suffers in rhachitis in both particulars. The cartilaginous and subperiostial cell growth which produces ossification goes on with increased rapidity and in an irregular manner, while the actual ossification is equally irregular or even wanting. The second part of the process, the absorption of preliminary formations and the construction of medullary and other canals, is excessively active. There is a deficiency of building material, and one part is robbed to supply another.

The influence upon the nervous system of the rhachitic anæmia is one of its most baneful and lasting effects. The nervous tissue, like the osseous tissue, does not receive its proper building material; it is starved, and consequently is improperly developed—the nerve centers seem to suffer the most severely, and certain ones apparently more than others. Rhachitic children are often precocious in their mental development, but they are irritable, easily unbalanced, and more prone to develop some form of nerve stome. In part, we should ascribe the imperfect tissue development to faulty activity of the trophic centers; next to these nutritive influences I should place those belonging to the inhibitory apparatus—the inhibition of reflexes in these children is always im-

perfect, they do not learn to disregard peripheral impulses which demand no consideration. An impulse which should give rise to only a limited reflex response is not confined to its simple route, but is transferred to other centers and calls out unnecessarily complex reflexes. In a similar way volitional inhibition is not well developed, and there is not the proper mental control even in those whose minds are precociously active. To this lack of inhibitory control and the abnormal irritability of nerve terminations is due the fact that these children are prone to suffer from partial or complete convulsive seizures. *Laryngismus stridulus* is rarely met with except in rhachitic children, and by many observers is claimed as a diagnostic symptom of the disease. Convulsions, which may occur in any child during early infancy, are liable to follow the rhachitic child through several years of its early life. Convulsions occurring after the end of the first year should always excite a suspicion of this disease.

Whenever tetany is present in infancy it is in rhachitic subjects. Other forms of nervous irritability have been observed in these children, and Erb has pointed out the fact that there is an increased electric excitability of nerves to both faradism and voltaism; that the mode of reaction to the voltaic currents is altered, and with positive and negative opening there occurs a prolonged contraction or tetanus. The muscular system is never as well developed; its tissue does not present the normal tonicity, it has not the same power of performing work, and it cannot as readily recuperate after exhaustion of its excitability.

The glandular apparatus suffers both in its structural and functional developments; individual glands may be abnormally large, and this is often the case with the liver, spleen, and pancreas; this enlargement is due, however, to increase of connective tissue, with a corresponding diminution of active cell structure; the capability of the gland is usually in reverse ratios to its abnormal developments. Nonassimilation is always a factor of rhachitis, and in the shape of chronic catarrhal gastro-enteritis and persistent dyspeptic diarrhœa may be its herald, or at least its first manifestation. When the disease is well advanced we could hardly expect anything else. Its low standard of blood structure, inefficiency of nervous control, with consequent proneness to venous stases, its tendency to excessive mucous secretions, and its impaired organs and tissues offer all of the conditions possible for impaired food metabolism and assimilation.

Relation to Other Diseases.—While I do not agree with Parrot that rhachitis is always an outcome of syphilis in a preceding generation, my observation has taught me that the disease is frequently developed from syphilitic parentage. The impairment of the mother's nutrition by syphilis seems to offer exceedingly good ground into which to engraft rhachitis; moreover, both diseases are frequently found co-existing in infants. Children in whom tubercular conditions are either active or latent seem to have an immunity from rhachitis.

Rhachitic children are always catarrhal subjects; they develop acute catarrhs under slight provoca-

tions; catarrhal inflammation in them are liable to affect submucous tissues and be destructive in their course and results, and have a predilection to become chronic.

In the vegetative part of the system I find the primary causes of the development of this disease; and I am also sure in my own mind that in the vegetative system, and in the character of its works, we shall find its first manifestations. For this reason, except in very advanced cases, the prognosis, so far as life is concerned, is usually favorable. The disease may be arrested in any of its stages, and many vitiated tissues and organs may be brought up to a healthy standard; bony excrescences may be wholly or in part reabsorbed, crooked bones may be improved by the improvement of muscular tone; improved nutrition may make it possible for the surgeon to work wonders with a deformed skeleton; abnormally large glands with little physiological capability may be brought to a fair degree of usefulness; and an equipoise of the nervous system, necessary for the maintenance of health, may be acquired.

The "*sine qua non*" for these changes are good food and hygienic surroundings.

I do not in this statement wish to despise or underrate the value of medication. I believe that our knowledge of such remedies as the *calcarea* compounds, *phosphorus* and the *phosphates*, *iodium* and the *iodides*, and others, often as serviceable, makes it possible for us to obtain results out of the reach of our allopathic friends both as regards time and extent. Yet our remedies will accomplish little if our patient is not

fed properly and has not the chance to make the acquaintance with sunshine.

RHEUMATISM.—The delicate tissues and organization of children exhibit a more extensive area of disturbances under the influence of rheumatism than is found in those of the adult. Rheumatism was formerly supposed to rarely occur in children and never in infants, but more careful observations show that it is as common in children as in adults, and that it is not uncommon during early infancy. In children the phenomena are not limited to the fibrous tissues, the synovial and serous membranes. Erythema, tonsillitis, chorea, pleurisy, tendinous nodules are just as frequent manifestations of rheumatism in children as arthritis and pericarditis are in adults; while endocarditis, usually considered in adults as a *sequela* of the disease, is in childhood a frequent and at times the only phenomenon observed. The various manifestations of rheumatism are in adults apt to be massed together and appear within a few weeks; in children, on the other hand, they show a tendency to be distributed over years, and may be the history of a whole childhood. Arthritis, the most characteristic feature of the disease in adult life, is in children the least prominent, while endocarditis, one of the rarer phenomena in adults, is one of the most frequent and persistent types in children.

Etiology.—The most certain predisposing factor of rheumatism in childhood is hereditary influence. The most common exciting cause is chilling of the surface of the body. The poison of scarlatina seems also to be a direct exciting cause.

The exact essential etiological factor of the disease has not been demonstrated. The most commonly accepted theory, that it is due to irritation from the excessive amount of lactic acid present in the system, is not admitted as proven. It is the old question of "*post hoc*" and "*propter hoc.*"

Dr. J. R. Mitchell's theory of its neurotic origin has to-day no common acceptance.

Dr. T. J. Maclagan, in the "Twentieth Century Practice of Medicine," makes a strong plea for the miasmatic theory of rheumatism.

Dr. Alfred Mantle claims to have found a micrococcus and a small bacillus constantly present in rheumatic lesions. He has made cultures of these micro-organisms and reports successful inoculations. His experiments have been verified by very few and are disputed by others. The fact that endocarditis has been shown to be of microbic origin lends force to this theory.

In the face of all of these conflicting theories we have as universally accepted facts only the clinical features of inheritance and chilling of the surface.

Clinical History.—Acute rheumatism may present itself in a variety of forms, depending upon the organ or tissue most seriously involved. It can be more concisely discussed by describing individually its various types. It should be borne in mind that, especially after the sixth year of life, rheumatism may present itself in the classical way and run an ordinary course. In such cases the onset is sudden, the maximum of the disease is reached in a short time (two or three days), the temperature does not

range high (102 to 103 F.), the course of the disease is short (two to three weeks), new attacks, or *sequelæ*, are apt to appear in succeeding years.

Arthritis.—As has been already mentioned, arthritis is neither a common nor a severe symptom of rheumatism in children. It is frequently present only as a little stiffness or tenderness of one or two joints, with but slight febrile reaction. Its significance is often entirely overlooked, until endocarditis or some other symptom develops and recalls its occurrence; so frequently is it the case that no history of arthritis is obtained, that all writers state that it is not necessarily a part of the disease. In other cases the inflammation may be limited to the tendon or sheath of a muscle, and give rise to a muscular contracture as the only primary symptom of the disease. Torticollis is a frequent manifestation of this type. Next in frequency, and often misleading, is a localization of the inflammation in the ham-string tendons at the back of the knee, causing an inability of the child to put the heel to the ground in walking. Profuse acid perspiration and its attendant results, sudamina and miliaria, are not, as in adults, common symptoms of acute arthritis. While the inflammation may, as it is prone to do in adults, involve many joints, it is more liable to be limited to one or two. Persistent joint inflammation or even tenderness should always suggest to our minds tuberculosis.

Endocarditis.—In the majority of all cases endocarditis appears either with or following the joint disease. Very often it appears at the time as the sole

evidence of the disease, or it may be associated with the development of subcutaneous nodules, an index of valvular involvement. Again, erythema or chorea may be the accompanying conditions. In all of these types the endocarditis develops slowly and insidiously; does not for some time attract any attention; is prone to continue and to relapse. The inflammation has a special tendency to attack the valves, particularly the mitral valve, and to produce serious lesions. The valves, the fibrous tendons of the valves, or the musculo-fibrous ring around the opening may be thickened, distorted, or contracted by inflammatory deposits. Fibrous nodules on the valves and tendons are frequently found at *post-mortem* examinations. Fibrinous masses may be washed from the sites of inflammation and cerebral or pulmonary embolism result. These pronounced lesions, with their signs, do not appear early. Restlessness, anxiety, hurried breathing, pain in the cardiac region, and slight fever are the early symptoms. As the disease progresses, a mitral or more rarely an aortic murmur is developed (a diastolic mitral or aortic murmur is not often found), the impulse becomes increased in force, the pulse becomes more frequent and irregular in force. The rise in temperature even in severe forms of endocarditis may not be more than one or two degrees.

Pericarditis.—Like endocarditis, it may appear with or before any joint affection; it is not as frequent in young children as endocarditis; in older children it is frequently associated with it; it has the same tendency to become subacute, chronic, and intermit-

tent; otherwise it does not differ from the same condition in adults, and presents the same signs.

Pleurisy and Pneumonia.—These are much less frequent than cardiac lesions. Pneumonia only occurs as an accompaniment of pleurisy, pericarditis or mitral disease, or as the result of an embolism; in any case it will be left-sided. Pleurisy may occur as a primary expression of rheumatism, or it may be secondary to pericarditis. In the former case it is readily amenable to treatment, in the latter it adds a serious complication to an already dangerous condition.

Tonsillitis.—An inflammation of the tonsils and pharynx, with fever and difficulty in swallowing, may usher in an attack of acute rheumatism, may accompany any form of primary manifestation or may occur at any stage of the disease. Rheumatic children are always prone to attacks of tonsillitis.

Erythema.—Erythema is frequently present with either articular or cardiac forms of the disease; or it may appear during the quiescence of other symptoms and represent a separate stage. *Erythema marginatum* and urticaria are the more common forms. *Erythema nodosum* and purpuric erythema are also claimed as evidences of the disease.

Fibrous Nodules.—Subcutaneous nodules are as common in children as they are rare in adults. They vary in size from that of a pin's head to that of an almond; they are hard, slightly sensitive to pressure, and are apt to appear in the neighborhood of a joint; they tend to come and go, and are almost invariably a sign of cardiac affection. Recurring crops indicate a progressive cardiac lesion.

Chorea.—Not all cases of chorea are due to rheumatism, but a large proportion of cases are associated with the rheumatic state; this is particularly true of those cases appearing between the years of ten and fifteen. It occurs in connection with simple joint pains, which are probably rheumatic; it frequently attends or follows distinctly rheumatic arthritis; it occurs in connection with endocarditis and pericarditis; it bears no relationship to any other disease except scarlatina, which also has an etiological connection with rheumatism. When associated with rheumatism it is more intractable than when not so associated.

Anæmia is a prominent symptom of rheumatism in children. To a certain extent it is present in all cases, and sometimes progresses to an extreme degree. It may be accountable in part for the serious lesions in cardiac manifestations. The most serious part of rheumatism is the extent of the lesions which may be produced by the cardiac inflammation. The acute attacks are apt to run a mild and rapid course, early convalescence is to be expected, but cardiac lesions are of frequent occurrence, are insidious in their development, and are intermittently persistent if left to themselves. Serious cardiac lesions may, however, with help be wonderfully repaired if relapses can be prevented.

Treatment.—The most important point to bear in mind in the treatment of this disease in children is the liability to relapses and *sequelæ*. Proper clothing, hygienic surroundings, a climate devoid of sudden changes, a locality free from miasmatic influences,

and a persistent attention to general health are all greatly to be desired; unfortunately the rheumatic child frequently cannot command all, or even any of these conditions. Rest of the affected part and general rest should be maintained; during an acute manifestation the child should remain in bed. The remedies to be employed do not materially differ from those which have proven themselves useful in the disease as observed in adults.

Aconite and *bryonia* I have not found as frequently indicated, probably because the arthritic form of the disease is not as common or pronounced.

Ferrum phosphoricum is often useful for anæmic children where there is great sensitiveness of the skin, general irritabilty, moderate fever, and indefinite pains. In the early stages of endocarditis it has been of great service to me.

Actæ racemosa, or its alkaloid, *macrotin*, is of especial value for the pronounced cardiac lesions, fibrous nodules, and muscular contractures due to inflammation of tendons and muscle sheaths.

Kalmia latifolia enjoys a reputation for its ability to control endocarditis and pericarditis in rheumatic subjects, but my observation does not bear this out in the case of children. *Macrotin* and *ferrum phosphoricum* have been of more service to me.

Rhus toxicodendron frequently finds its counterpart in the condition of rheumatic children. Great restlessness, severe pain, muscular soreness, and an approach to a typhoid picture will always suggest its use.

Phytolacca, more frequently than any other remedy, will be indicated for the throat affections.

Pulsatilla—The erratic rheumatoid pains from slight chilling, general hyperæsthesia, morbid sensitivness, aggravated from dietary excesses (candy, etc.), choreic manifestations are all classic symptoms of *pulsatilla*.

Sulphur is a remedy too frequently neglected in rheumatism. There is hardly a rheumatic child that does not at some stage of the disease require *sulphur*. There is no remedy which will so frequently help us in preventing the relapses, the returns, and the new phases of this disease.

SYPHILIS.—Syphilis in infancy and childhood may be either acquired or hereditary.

Acquired syphilis in infancy and childhood is contracted in the same way as in adults, viz., by the inoculation with virus from a chancre or bubo, or from certain secondary lesions. The secondary lesions now universally admitted as capable of causing infection are mucous patches, and cutaneous lesions having an exudation. Fissures and cracks at the muco-cutaneous margins, excoriated nipples, mucous patches or tubercles on the tongue, or the saliva of one who has any syphilitic lesion of the mouth, pharynx, or nasal fossa are capable of giving the infection. In all cases there will be at the site of infection the usual chancre, and the usual after effects of the disease will follow. There is nothing especially different in the course of the disease in childhood; its varied manifestations will not be considered in this discussion. It is worth while, however, to mention the fact that a child may be infected at birth by its mother, or shortly after birth by someone else, the primary chancre be

overlooked, and the secondary symptoms be mistaken for the hereditary form.

Hereditary Syphilis.—Either parent having syphilis in its first or second stage may transmit the disease to their offspring, even though at the time of conception neither parent shows any symptoms of the disease. If both parents have syphilis at the time of conception, the disease is invariably transmitted to the child, and usually in a virulent form. If only one parent is syphilitic, the child may or may not be syphilitic. If the mother, healthy at the time of conception, contracts syphilis prior to the eighth month of pregnancy, she may transmit the disease to the child *in utero*. Syphilis contracted by the mother during the eighth or ninth month of pregnancy is not likely to be transmitted to the child, but unless especial care is used the infant is liable to be infected at birth. It is universally agreed by all observers that syphilis, after the close of the second stage, is not transmitted to the offspring, but such parents are liable to beget children who will be especially prone to develop rhachitis, and be especially liable to tubercular and catarrhal inflamations. The chances of infection of the fœtus and the severity of the type, if infected, are in direct proportion to the activity of the disease in the parents. Specific treatment lessens the liability to infection. Continuous treatment for eighteen to twenty-four months is believed to eradicate the possibility of hereditary transmission. Time alone has its influence in this direction. Four years in the father and six years in the mother are considered a sufficient time for the specific hereditary influ-

ences to run out. Children begotten during the period of primary activity are liable to be still-born or to die soon after birth. If a father infects the mother, the child is almost sure to be still-born or to die soon after birth. During periods of latency of the disease the mother may bear healthy children and give birth later to syphilitic children as a result of renewed activity on the part of the disease within herself. Children conceived some time (two, three, or four years) after the infection of the parent or parents are not liable to develop virulent forms of the disease; are not liable to manifest the symptoms early; are not liable to show the ordinary symptoms of hereditary syphilis; they are more liable to develop the symptoms corresponding to the late manifestations of the acquired disease, such as periostitis and affections of the nervous system.

Syphilitic Virus.—Most pathologists believe that syphilis is a microbic disease, but it has not been determined what special micro-organism is the essential factor in the disease. The bacillus discovered by Lustgarten to be present in syphilitic lesions is the only one which has established any claim to recognition. The inability thus far to cultivate this organism, and the fact that no animal except man is capable of inoculation, has as yet rendered a proof of its etiological importance impossible. It has not even been agreed whether the bacillus itself or only its toxines migrate from the parent to the offspring.

Pathology.—The more common form of tissue change which takes place in hereditary syphilis is diffuse interstitial hyperplasia of the connective tissue;

circumscribed gummata are much less common than in the acquired form. The visceral organs liable to be affected and in their ratio of frequency are the spleen, pancreas, liver, lungs, testicles, and kidneys. In the case of each organ, as above stated, the lesion is usually an interstitial hyperplasia of connective tissue, which increases the size and density of either the whole or some part of the organ, and which encroaches upon the essential cell structure, thus impairing its physiological capabilities. These lesions, when not too severe, are often amenable to treatment. The bone lesions are of two types, viz., osteochondritis and osteoperiostitis. Both lesions are more liable to involve the long bones. Osteochondritis belongs to early infantile manifestations, while osteoperiostitis is usually observed later on toward the period of puberty. Osteochondritis is peculiar to syphilis, and starts at the zone of proliferation between the bone and epiphyseal cartilage. It may materially affect the growth of the bone. It is apt to be symmetrical. The number of bones involved appears to be in direct ratio to the virulence of infection, and the greater the number of bones involved the graver are the infant's prospects of life. Besides these common types, dactylitis frequently occurs, and the fingers or toes may swell to twice their normal size, assuming a peculiar pyriform shape. Upon the skin we may have lesions of the type of erythema, macules, papules, vesicles, and pustules. It is quite characteristic of syphilis to have a variety of skin lesions co-existing; blebs appearing either at birth or in the first months of infancy upon the palms

of the hands or soles of the feet are also characteristic. Catarrhal inflammations of some part of the mucous membrane of either the respiratory or alimentary tract, or both, are present, mucous patches may be found in the mouth or pharynx, and fissures at some of the muco-cutaneous margins.

Clinical History.—Under the influence of the syphilitic poison the fœtus often ceases to grow, dies, and is expelled long before term. It may be born prematurely, and show marked indications of the disease when it comes into the world, or it may be born at term but dead. About seventy per cent of still births are due to syphilis; in such cases the fœtus is usually macerated and may show bullæ. The clinical course of the disease presents itself in two rather pronounced types, the early, occurring in infancy, and the late type toward puberty.

The Early Manifestations.—The early symptoms, correspond to the secondary stage of acquired syphilis. In the severe types the infant shows at birth, or within a few weeks after birth, an efflorescence of the skin; this efflorescence has a predilection for the nates, the parts around the genitalia, the palms, and the soles. A simple erythema represents a mild form of the disease, while papules and pustules each indicate a severer type of infection. Blebs are found in pronounced cases, and when occurring on the palms and soles are very characteristic. Together with the efflorescence there is present, or early develops, a persistent excoriating coryza; complete occlusion of the nares may occur. The cry is hoarse, weak, and often only a plaintive whimper. The

child is small, poorly developed; there is an absence of any subcutaneous fat; the skin is dry and hangs in fold; the face has an old, anxious expression. Syphilitic infants rarely look happy, never smile, and are very fretful; persistent fretfulness and crying at night are in themselves always suggestive of hereditary syphilis. These children always manifest evidences of indigestion. Dyspeptic diarrhœa, with foul smelling excreta containing mucus and undigested food, is the usual accompaniment of the disease. All of the excreta, including the perspiration and breath, are foul smelling, and a peculiar penetrating odor clings to the child even after its bath. These digestive symptoms are in part due to catarrhal inflammations of the stomach and intestine and in part to the lesions of the digestive glands, the liver, spleen, and pancreas.

Syphilitic lesions of the mouth in early infancy consist of mucous ulcerations on the cheeks, tongue, and lips; they are more or less painful and sluggish in repair. Those involving the lips are apt to select the commissures of the mouth and produce deep fissures with indurated bases; these are known as rhagades. As a result in part of the impaired digestion, we may have various forms of stomatitis engrafted upon these mucous sores which do not represent purely syphilitic lesions. These children usually show osteochondritis of some of the long bones; so common is this the case that some authors claim that the diagnosis of this early type is not made until it is found. Children are frequently born apparently healthy, showing no evidence of impaired nutrition

or other lesions until some months after birth, when characteristic syphilitic lesions make their appearance. It is claimed that the virus may remain latent until the sixth month, but certainly in the great majority of cases they develop before the close of the third month of infancy. The symptoms do not differ from those which we have described as appearing immediately after birth, and may go on to the same fearful extent. As a general rule, the later the symptoms begin to appear and the slower they develop, the more amenable to treatment and the less severe.

All of these cases do not show the typical lesions of the disease, and in mild cases there may be a doubt as to their character. A persistent acrid coryza, even without mucous ulceration, persistent dyspeptic foul smelling diarrhœa with emaciation, an old expression with wrinkled anxious face, persistent fretfulness with insomnia, are all classical symptoms. If any of these conditions are present, together with an enlarged liver and spleen, there can be little doubt of their significance. When osteochondritis is found, all doubts are removed.

A large proportion of syphilitic children die, but many who present very grave lesions and who develop the lesions early in infancy do not succumb to the disease. The most important point in their care is to maintain their general nutrition. This is not always easy to do. The mother often does not have sufficient breast milk, and when the mother herself has been suffering from the disease her milk is very frequently an insufficient food. Syphilitic babies should not be given to a wet-nurse, because of the

danger to the nurse. Their food is often prepared with no appreciation either of their wants or of their feeble digestive powers. The more an infant's digestion is impaired the harder it becomes for him to digest caseine. Fat and sugar are what they need, and cream and sugar of milk are what they can digest with the least effort. I have found a simple cream mixture which does not contain more than one per cent of caseine, four per cent of fat, and seven per cent of sugar of milk the best food for them and the most likely to be well digested. Where a milk laboratory can be called upon for aid, there is no trouble in obtaining the desired proportions. Where fresh cow's milk can be obtained, we can make a good substitute milk. Good cream contains from sixteen to twenty per cent of fat and one to four per cent of proteids; diluted with five or six parts of water to one part of cream it will give a fair proportion of fat; sugar of milk should be added in the proportion of 3⅜ drachms to every eight ounces of the mixture.

Much discussion has taken place as to the relationship between rhachitis and syphilis and between tuberculosis and syphilis. Rhachitis is essentially a disease of malnutrition, and anything which so profoundly affects the nutrition as syphilis can undoubtedly influence its development. The characteristic bone lesions are entirely different, and it is not an unusual thing to find both lesions existing in the same case. A syphilitic parentage, where the active evidences of the disease have been overcome, may transmit a weakened constitution which less easily with-

stands the deprivation and unhygienic surroundings which are the progenitors of rhachitis. Tuberculosis, like syphilis, is a disease of civilization, and some researches which have of late been made seem to show that tuberculosis follows syphilis; that not until syphilis has lowered the natural resiliency of a race are they liable to tuberculosis. In the individual case we know that an organism which has suffered the ravages of syphilis, either acquired or hereditary, offers a suitable soil for the development of the tubercular bacilli.

The Later Manifestations of Hereditary Syphilis.—In certain cases of hereditary syphilis either no symptoms whatever are noticed at birth or they are so indefinite in character that they are not recognized as syphilitic lesions. The lesions of hereditary syphilis correspond to the tertiary stage of the acquired disease; they appear at different periods during childhood, but especially about puberty. Many who showed the infantile type of the disease, and in whom the evidences of the disease have been abated or have become latent, are sufferers from some form of the later manifestations. Lesions of the bone are prominent conditions during this period. These lesions may be in the form of a periostitis or an actual necrosis. The bones of the nose are often involved and flattening of the bridge is quite characteristic. Two types of lesions of the frontal bones are considered syphilitic; one where there is a prominence on either side with a pronounced depression between; the other where there is a prominence in the center with a flattening on either side, giving a shape which

simulates the keel of a ship. These same forms of tuberculosis may appear on other bones, and on the long bones give them the appearance of curvatures.

The first set of teeth show nothing which is characteristic of syphilis, though they often present evidences of malnutrition similar to those which may be due to a variety of causes.

In the permanent teeth there are several peculiarities which are due to this inheritance:

1. The teeth are apt to be irregular in contour and irregularly placed.

2. The two upper middle incisors are hollowed out on their cutting edges, with a central convexity upward.

3. The other incisors may have deeply serrated cutting edges.

4. Round or peg-shaped teeth are often observed.

5. One or more of the incisors or canine teeth may be wanting.

6. There is often a deficiency of the alveolar arch at the anterior part, so that when the jaws are closed the upper and lower teeth do not come together.

Interstitial keratitis is a frequent symptom of the late form. It usually disappears under treatment, leaving no trace behind. Extensive ulcerations of the nose or pharynx may occur at any period of childhood. A persistent form of deafness without any special lesions is sometimes observed.

The nervous system is liable to suffer; not as frequently as in the acquired form of the disease, but often enough to give us some data. Intra-cranial syphilis may appear as a diffuse meningitis, as local-

ized gummata or as endarteritis. It is characteristic of any of these forms of lesions to develop slowly and to be accompanied by little or no fever. The meningitis may evidence itself for several weeks only by more or less constant headache in various parts of the head; later paralysis of some intra-cranial nerve may appear, with evidences of a severe intra-cranial affection.

The symptoms produced by syphilitic gummata do not differ from those produced by any localized cerebral tumor, and their recognition as such must depend upon the presence of other syphilitic manifestations Endarteritis is especially liable to affect the arteries at the base of the brain. It may lead to local dilatation, with a thinning of the arterial wall, and result in a hemorrhage, or there may be produced an occlusion, which cuts off the blood supply, and result in more or less softening and disintegration of cerebral tissue. The symptoms will of course vary in accordance with the part of the brain affected. The most common are the various forms of paralysis of the extremities and sensory disturbances. Any of these forms of the disease are more liable to yield to treatment than are similar conditions not depending upon syphilis.

Syphilis of the spinal cord may present itself as an obliterative endarteritis or as a general arteritis; it may or may not be associated with same condition in the cranium. More often syphilis of the cord is associated with a subacute or chronic meningitis or meningo-myelitis. The important features to bear in mind in either of these forms of the disease are:

1. The unusual distribution of the disease over the greater part of the cord.

2. The slight intensity of the affection at any one level as compared with the extensive areas involved.

3. The rapid improvement of some symptoms and the persistency of others.

4. The frequent history of other manifestations of the disease elsewhere.

5. The fact that they have a tendency to improvement and an equal tendency to relapses.

The mental development of syphilitic children is often retarded; they appear several years younger than they really are. The lesions of the bones may interfere with proper osseous development and dwarfing be the result. Syphilitic children are late in arriving at puberty and a diminutive type of the genitalia may persist all through childhood.

Treatment.—The importance of proper feeding and nutrition has been mentioned. These subjects are liable to dyspeptic disorders, and especial care will be required to maintain nutrition; the higher the standard of nutrition, the better will they respond to our efforts and the more perfectly will they outgrow the effects of their vitiated inheritance. They will also demand the strict observance of every hygienic rule.

The medical treatment is as varied as the manifestations of the disease. I am not one of those who find in *mercurius* the sole or even the most frequently indicated remedy. *Mercurius* does not cover all of the symptoms of secondary syphilis, and almost none of those of the tertiary stage. Hereditary syphilis

presents conditions and symptoms corresponding to the second and third stages of the acquired disease. Mucous ulcerations, characterized by extensive inflammation and swelling, will demand *mercurius*, also some forms of dyspeptic disorders and bone lesions with nightly aggravations of pain.

The catarrhal inflammations are more apt to demand some of the various *kali* preparations. Hereditary syphilitic symptoms, like the *kali* pathogeneses, are characterized by the absence of, or low grade of fever.

Kreosotum will often control the foul smelling diarrhœas and rob the child of its usual peculiar penetrating odor. It is also of service in controlling dental caries and in healing the cracks and fissures at the commissures of the mouth.

The *iodide of potash* is a valuable remedy with which to arrest the progress of lesions of the glandular, the nervous, and the osseous systems, but it can frequently be well followed or replaced by the *iodide of calcarea* or the *iodide of arsenicum* in lesions of the glands; by *silicea* or *zincum* or *sulphur* in those of the nervous system; and by *hepar sulphuris* or *aurum* or *nitric acid* in those of the osseous system.

Mezereum, *thuja*, or *sulphur* are remedies frequently required to clear up the various skin manifestations.

Strictly homœopathic medication will yield the best results in the treatment of hereditary syphilis, and we do not need very often to resort to so-called antidotal treatment.

TUBERCULOSIS. — **In General.** — All diseases, whether local or general, which are due to the development of the tubercle bacillus of Koch are now included in the one general term—tuberculosis. The lesions formerly known as scrofulous, affecting the glands, bones, and skin, are recognized as of bacillary origin, and the term "scrofula" is rapidly becoming obsolete. Nothing has come of the theory advanced by Martin that recovery from scrofulous lesions afforded an immunity from pulmonary tuberculosis. On the contrary, it is generally accepted that mild tubercular inflammations, whether of the superficial glands, the skin, or the bones, are a constant menace, not only during their period of active inflammation, but also during their period of latent quiescence.

I do not propose to go into a scientific discussion of the tubercle bacillus and its relationship to the disease; this has been thoroughly established by a host of better qualified observers. A study of the bacillus, its methods of cultivation, its methods of life, and the histological structure of its ultimate product, the tubercle, are not in our province.

There are a few general facts in relation to it which I desire to state. The bacilli are tenacious of life and retain their virulence after desiccation and freezing. Desiccation and the exposure to the air lessen their virulence slowly and will in time render them sterile. When fully exposed to the direct rays of the sun they are destroyed in a few hours. Heat is the surest agent for their destruction. Boiling destroys their virulence in a few minutes, and a temperature of 158 degrees F. in distilled water for a

half hour is sufficient to destroy them. They withstand a temperature of 212 degrees F. in a dry medium for several hours without losing their virulence. Outside of the body they have been shown to be very wide-spread, the number in any particular locality depending upon the number of cases of tuberculosis in that locality and the lack of precaution in sterilizing their sputa. The dust of cities and thickly crowded communities always abounds with them; at the resorts for consumptives they can always be found in hotels and lounging places; the upholstering of cars and furniture used by consumptives will always yield its quota. The dried sputa, mingling with the dust, traveling whither the wind blows, invading every crevice and lodging in every resting place, is the fertile source of the spread of infection.

It is stated that the bacilli have been found alive in bodies dead of tuberculosis, two years after their burial. The contamination of water draining from burying grounds, even distant by miles, is another source of contagion.

That the bacillus is an essential etiological factor in the development of tuberculosis is, we believe, accepted by everyone. With this fact should always be associated the equally necessary conditions, viz., an impaired tissue and an arrest *in situ* long enough to obtain a foothold. The healthy skin aud the ciliated epithelium of the respiratory tract afford a perfect barrier to the invasion of the bacilli. The other forms of epithelium covering the mucous membrane of the orifices of the body is also a successful barrier to invasion—the bacilli cannot live in a healthy stom-

ach secreting normal gastric juice. A membrane robbed of its epithelium offers an open door for invasion—an excessive catarrhal secretion offers a good nidus for a culture. A vitiated gastric secretion will allow bacilli to enter the intestinal tract in possession of their full virulence. A study of the tissues drained into the superficial and deep lymphatic glands will explain why the bacilli so frequently find an entrance in children to the cervical, bronchial, and mesenteric glands. A cutaneous eruption of the face opens the door to the superficial cervical glands. A diseased tonsil or a dental caries may carry infection to the deep cervical glands. An extension beyond the cervical glands or chronic catarrh of the pharynx and larynx will involve the tracheal glands, while the overflow of the latter is bound to be into the bronchial glands. A diseased intestine, or even an impaired stomach digestion, renders the mesenteric glands liable to invasion. With the acceptance of the theory that the tubercle bacillus is the etiological factor our ideas of the methods of invasion have been materially modified. Hereditary transmission is now recognized as a favoring condition rather than an essential factor. In a few rare cases tuberculosis has been transmitted directly from the mother to her offspring. The mode of transmission is not at all certain, but it is probably through the medium of the placenta, though tuberculosis of the placenta is very rare. There is no evidence to show that a tuberculous father can directly transmit it to his offspring. Statistics show that tuberculosis is a very rare cause of death before the completion of the third month; that it is an un-

common cause of death from the third to the sixth month of life; and that it is a rapidly increasing cause of death from the sixth month on through the second year of life. The development of the germ depends in great measure upon the character of the tissue soil. It is being recognized that a syphilis and a catarrhal inheritance are factors in the development of the disease in childhood, second in potency only to the tubercular inheritance.

Inoculation is not a common method of invasion for children. Two sources have, however, been observed often enough to attract attention: First, in the performance of the right of circumcision, where the wound has been "cleansed" by suction by a tuberculous operator; second, by tuberculous midwives who have practiced mouth to mouth inflation in the new-born.

Inhalation of the expired air of patients suffering from tuberculosis is not a common method of invasion, but the sputa, dried and disseminated through the air in the form of dust, is a very common method of invasion. The danger from this source is very much increased where the patient and nurse are closely related. This method of invasion is least common in modern hospitals where the sputa is never allowed to become dry, but is very common in jails, prisons, convents, and factories. Hotels and houses where patients have died of tuberculosis, unless properly sterilized, are a standing menace to succeeding occupants. This fact explains in part why members of succeeding generations of the same family succumb, especially in the older cities, and detracts from

the force of the family argument for direct transmission by heredity.

Ingestion of tuberculized food is one of the most common means of invasion for children. The cow is peculiarly susceptible to tuberculosis, and milk constitutes an important article of food during infancy. Experimentation has proven conclusively that milk *may be* infective even if tuberculosis is confined to the lungs of the animal, and that bacilli may be found in the milk even if there is no disease of the mammary gland. The virulence is retained in cream and butter. Other conditions are necessary besides the ingestion of the tuberculized food. All children using infective milk do not contract the disease. The condition of the tissues may not favor the development of the germ; the gastric juice may destroy the germs. Experimentation has shown, however, that a lesion of the intestinal tracts is not necessary for invasion, but that infection of the mesenteric glands may take place through a healthy mucous membrane. The greater frequency of mesenteric tuberculosis in children finds its explanation in these facts. What has been said above in reference to infective milk applies to cows; that it is equally true of tuberculous women is probable, though it has not been definitely proven to be so.

The lesions produced by the growth of bacilli are in the form of small nodules, which, when found together, produce large inflitrated areas. The studies of bacteriologists have pointed out accurately the changes induced by the bacilli as follows:

(1.) The nucleated epithelioid cells forming a large

proportion of the nodule or tubercle are the result of the rapid growth and proliferation of the fixed tissue cells, viz., the ordinary epithelium, the endothelium of the capillaries, and the connective tissue cells. Inside of these epithelioid cells bacilli are found.

(2.) The round or lymphoid cells found around the group of epithelioid cells are leucocytes which have migrated from the neighboring and involved vessels. These cells do not undergo proliferation, but are increased in number by successive invasions; they represent the efforts of Nature to combat the bacilli;—in the first place, to absorb and carry off the toxines manufactured by the invaders, and, secondly, failing in this, to wall up and encapsulate the germs.

(3.) A reticulum is usually visible, which has its origin in the connective tissue matrix.

(4.) Giant cells in varying numbers are usually present; they may be due to cell growth without division, or to the fusion of several cells; they contain many nuclei; they are present in an inverse ratio to the number of bacilli in any nodule; they are abundant in joint and gland affections where the number and virulence of the bacilli are limited.

The tubercle or nodule thus formed may undergo caseation and necrosis, or gradually become converted into connective tissue. By the union of many degenerating nodules large masses may be formed which by softening result in cavities, or by fibroid development become encapsulated, or by sclerotic processes become limited. In their growth the tubercles destroy tissues, and, if the bacilli gain access to blood or lymphatic vessels, a wide-spread development of nodules will result.

Diffuse or General Tuberculosis occurs in children, as in adults, in two forms, *acute* and *chronic*.

Acute miliary tuberculosis running a rapid course is decidedly more common in infants and children than in adults; as a matter of fact there is always a local infection either by means of a gland or a joint or through the skin. This primary infection may have been in existence for some time, or it may be immediately followed by the diffused form. The disease may present itself in one or two forms, either as an acute affection without any definite local symptoms, or as an acute affection with symptoms, pointing to the serious involvement of some particular organ or tissue. The anatomical peculiarities of tuberculosis in infants differ in some particulars from those observed in adults, but after three years of age these peculiarities become less noticeable. As in adults, the acute form presents itself in three types,—a cerebral, a typhoid, and a pulmonary type.

The **cerebral tuberculosis,** or **tubercular meningitis,** is peculiarly an infantile type of the disease; it is frequently called basilar meningitis because of its usual location. This form of the disease is rare after the second year of life, and is one of the types in which heredity has been supposed to play a most important part. There has been, however, no proof produced that heredity does anything more than to prepare the proper soil.

Infection can be traced through the medium of the cervical and bronchial glands. The proneness which the disease shows to follow whooping-cough or measles is but an evidence that the zymotic affection served,

on the one hand, as an exciting cause to light up the disease which was dormant in the gland, or, on the other hand, laid the glandular tissue liable to the invasion. In children the pia mater is the seat of disease, and usually that part covering the base of the brain. The most favorite sites are in that part of the pia mater covering the olfactory nerve, the optic, and the third nerve. It has a predilection to form around the small arteries and follow them up to the larger vessels. This location explains to a certain extent some of the prodromal symptoms. The prodromal stage in infants and children may last but a week, and rarely more than two weeks. This disease will be found minutely described under the chapter on "Diseases of the Brain."

The **typhoid** type is usually insidious in its onset, there may have been noticed a growing indisposition on the part of the child for a week or two; or, as is often the case, it may come on suddenly in a child who has been supposed, up to that time, to be perfectly well. A bronchial cough may, or may not, have preceded the attack. Fever is noticed in the afternoon or evening, a temperature which gradually rises from day to day, with partial, or at first complete, early morning remissions. Together with this, there is loss of appetite, furred tongue, some abdominal distention and sensitiveness. The child is listless, loses in weight, and in the course of a week is sick enough to remain in bed. The liver and spleen are usually both enlarged and evidences of bronchial or pulmonary disturbance appear. The respiration is increased only in proportion to the rise in tempera-

ture and the bronchial symptoms point rather toward catarrhal inflammation of the larger tubes; headache, irritability, and delirium, especially at night, are usually present. The fever varies markedly in different cases; it usually has nothing which stimulates the typical typhoid curve. The daily rise is more rapid and may reach 101 degrees F. in a very short time. In other cases it ranges between 101 degrees and 102 degrees throughout the whole course of the disease. As the intensity of the disease obtains, its similarity to typhoid becomes more marked; the mouth becomes dry, the tongue furred, delirium or coma are present or succeed each other; the abdomen becomes distended, tympanitic, and hyperæsthetic, with lack of appetite and offensive exhausting diarrhœa; the liver and spleen are swollen and sensitive. The differentiation must be made by the absence of the typhoid rash, the different temperature curve, the family or personal history, the more serious involvement of the bronchial tubes, and the presence of localized forms of the disease. The course of the disease is very variable, while death may occur as early as the beginning of the third week, it is more apt to be protracted to the close of the fourth or even of the fifth week; if the disease continues as long as the fourth or fifth week, a tubercular meningitis, or a distinctly pulmonary form of the disease, or some joint lesion, will be set up and any doubt removed.

Pulmonary Type.—This is the more common form in children, and will be treated in the chapter on "Diseases of the Chest."

Chronic Diffused Type.—This is characterized by

the gradual development of the tubercular masses in many parts of the body; these are not tubercles of the miliary type, but coarse nodules of varying sizes. The chronic diffuse tuberculosis is much more common in infants than in children over two years of age. It presents a picture of progressive disturbance of nutrition; a continuous fever is rarely present, but high grades of fever are liable to occur as the result of otherwise trivial disturbances. The disease may begin as an acute catarrhal bronchitis or as an attack of broncho-pneumonia, or may follow measles, whooping-cough, or any acute gastro-intestinal catarrh. Emaciation is progressive and extreme, the skin becomes wrinkled and dry, and hangs in loose folds; the thorax small and the ribs prominent, while the abdomen is distended, the liver and spleen being swollen and sensitive; vomiting, diarrhœa, and a persistent cough are usually present. Fever is usually absent and the temperature is frequently subnormal. These cases often present a striking similarity to rhachitis or to hereditary syphilis; the differentiation can be made only by the history and a bacteriological examination of the discharges. Death usually occurs as a result of some complication.

LOCALIZED TUBERCULOSIS.

Tubercular Adenitis.—The cervical lymphatic glands drain the structures of the head and neck; the superficial group performing this duty for the side of the head, neck, and face, and the external ear; the deep group along the carotid sheath draining the mouth, tonsils, palate, pharynx, and larynx; while

the submaxillary and suprahyoid group drain the front of the mouth and tongue, the lower gums, the chin and lower lips. A diseased tooth, an ulcerated gum, an inflamed skin, or a naso-pharyngeal catarrh may open the door for invasion. A tissue weakened by disease, malnutrition, or vitiated inheritance offers a suitable soil and the bacilli have obtained a foothold. This form of tubercular disease is very common, probably the most common, in childhood. This is particularly the type of invasion which was formerly considered as characteristic of scrofula. The presence in the gland of the bacilli or of the ruins of its life-work demonstrate it to be but one of the various forms of the common disease. These glands may enlarge and soften rapidly,—break down and discharge with little involvement of adjacent tissues. More commonly, however, the enlargement is slow and they may be felt as hard lumps under the skin; they may gradually decrease in size and undergo spontaneous resolution; or the enlarged glands may show areas of softening, adjacent tissues become involved, and the bacilli invade deeper and deeper glands. Sinuses are established which only empty out a part of the morbific products and germs, while they offer a ready means for extension. The undermining of the superficial tissues and the tortuous sinuses leave ugly disfiguring scars. The majority of these cases of cervical tubercular adenitis are amenable to treatment. Success depends upon the early recognition. Our knowledge of the methods of invasion and extension should demonstrate the value of early surgical extirpation when Nature, aided by our help, cannot prevent *extension.*

Tracheo-Bronchial Adenitis.—Within the thorax there are many groups of lymphatic glands, all of which by means of the lymphatic vessels are connected with each other as well as with those of the neck. Those most commonly invaded by the bacilli are the tracheal and the bronchial; they may be involved secondarily as an extension of the disease from the localized form of pulmonary or pleural type, or as an involvement in the diffused type of the disease. In either case, growth is rapid, caseation and softening occur early; new symptoms appear as a result of their implication and the progress of the disease is hastened. These glands may be primarily invaded and be the only *foci* of the disease, or an extension of the disease from the cervical glands may be present without any general involvement. A very large proportion of all cases of tuberculosis in children show this method of invasion, and this often without any local lesion in the lungs. The growth of the glands may produce a great variety of symptoms, as pressure may be exerted upon the pneumogastric nerve, the recurrent laryngeal nerve, the pulmonary veins, the trachea, and the bronchi. The breaking down and discharge of the softened glands involves other tissues and is often the beginning of a diffused type; the most frequent exit for the discharge is into the bronchi. In the beginning of tracheo-bronchial tubercular adenitis the majority of cases show no definite signs; a slight rise in temperature of the tubercular type, a dry cough, are often the only symptoms to be observed, and if not associated with a faulty history are not apt to attract attention.

Mesenteric Tubercular Adenitis (*Tabes mesenterica*).—The mesenteric and retroperitoneal glands are often invaded by tubercular inflammation. In children it is often the primary form of invasion and has often been found accidentally at *post-mortem* examination where it had not previously been suspected. A lesion of the intestine is not considered essential to the invasion. The early symptoms are those of disordered digestion, and peritoneal inflammation; later we find persistent diarrhoea with offensive stools, inordinate craving appetite with extreme emaciation. With the advance of the disease the abdominal organs are first involved and later more distant organs; with the involvement of the lungs or meninges the usual rapid course of these types of the disease is instituted.

Tuberculosis of the Alimentary Tract (*Consumption of the Bowels*).—The intestinal form of the disease in children may be primary, but in the greater majority of cases is secondary to a general type or to a primary mesenteric form. The primary type is due to the ingestion of contaminated food, as tuberculized milk, while chronic catarrhal inflammation of the intestines are present. This undoubtedly explains why it is common only to young children. The secondary type is often due to the swallowing of tuberculized sputum. The ileum is the favorite seat of the disease and Peyer's glands the most vulnerable points.

Tuberculosis of the Liver.—The liver is not usually involved except as a part of a general tuberculosis. We find either a large number of miliary

tubercles or large nodules which soften rapidly. This latter form sometimes honey-combs the organ with abscesses. The so-called tubercular cirrhosis of the liver does not occur in children.

Tuberculosis of Serous Membranes.—*Tuberculosis of the Pleura* is usually secondary to pulmonary infection or to disease of the bronchial glands. Purulent pleurisies are usually associated with lobar or broncho-pneumonia, and in a certain proportion of cases are undoubtedly tuberculous.

Tuberculosis of the Pericardium.—This is a frequent disease of children, but is almost invariably associated with disease of the bronchial or mediastinal glands.

Tuberculosis of the Peritoneum.—Tuberculosis is one of the most common causes of peritonitis in children. It occurs more frequently in boys than in girls and more frequently between the eighth and tenth year of life than either before or after this period. The disease may be primary in the peritoneum, but is more commonly due to an extension of the disease from the intestines, the mesenteric glands, or the genital organs. Either the miliary form of tubercles studding the whole peritoneum may be present, or they may occur as gray granulations with or without exudate, or, what is common in children, the tubercles are in the form of caseous nodules or forming tuberculous plaques. The exudate is purulent and the tissues become matted together. The inflammation may be confined to some one part of the peritoneum, as the pelvis or lesser peritoneal cavity, be saculated, and form a definite tumor. It may involve

the intestine in such a way as to produce occlusion by the compression of large caseous masses or by the formation of connective tissue bands, or the intensity of the inflammation may be in the central portion of the abdomen, a definite cyst be formed which discharges at the umbilicus, leaving an open sluggish fistula. The tubercular inflammation is often accompanied by an ascitic exudation. The ascitic accumulation may become encysted and point toward the surface, and very good results have followed surgical interference and free evacuation. There is nothing definite in the symptoms to differentiate tubercular from other forms of peritonitis. The temperature curve, if fever is present, the history, the emaciation, and the tendency to the formation of encapsulated cysts are all suggestive. The presence of the bacilli is the only positive sign.

Tuberculosis of the Lungs.—This condition is treated under the chapter on "Diseases of the Chest."

Renal Tuberculosis.—As a part of diffuse tuberculosis, affections of the urinary organs are more common in childhood than in adult life. The kidney is more frequently affected than any other part of the renal tract. It may be primary and affect only one kidney. Primary tuberculosis of the bladder or ureters is very rare; when affected it is by an extension from the pelvis of the kidney or from the prostate gland, the epididymis, or seminal vesicles. The urine is usually increased in frequency and in amount and contains mucus, pus, kidney and bladder detritus, blood, and bacilli. Irregular fever and chills are common. When the bladder is affected all the symptoms of cystitis are present.

Tuberculosis of the Testes.—The testes are frequently involved as a part of the diffuse disease and primary tuberculosis of these organs is not rare. The presence of nodular masses in the testicles may be of help in determining the character of some obscure intestinal or abdominal affection. The tubercles may break down and suppurate, form adhesions to the skin, and discharge through persistent sinuses. In such cases the testicles will become very much enlarged.

Tuberculosis of the Uterus and Adnexa.—These organs are very rarely primarily affected in children, though their involvement in diffuse types of the disease is not uncommon.

Tuberculosis of Bone.—Tuberculosis of the bones is not a primary form of the disease, but is due to the emigration of the bacilli from other *foci* through the medium of the blood. It is found in a variety of forms, as osteomyelitis, hip disease, spinal caries, abscesses, etc. It is not always easy to differentiate the tuberculous from other forms of bone inflammations. A daily rise of temperature of not more than one-half of a degree is always a suspicious symptom; a faulty inheritance may help in the diagnosis. Progressive anæmia and tenderness are also early symptoms. Senn states that "in ninety-five out of every hundred cases chronic inflammation of the bone means tuberculosis." The hypodermic needle will yield fluid in which the presence or absence of the bacilli may be determined. If the location of the disease is in an accessible part, we look for good results when the progress has been slow and the patient's general health has been good. Absolute rest is a *sine qua non* for improvement. Everything which improves the

patient's general health is of value, and surgical interference is often required.

Tuberculosis of Joints.—These inflammations are usually chronic and secondary forms of the disease. The bacilli are brought by the circulation and localized in the joint by some slight bruise or strain. The disease may be primary in the synovial membrane or in the bone. The disease is usually curable if early recognized. There is liable to be some impairment of the joint. Immobilization of the joint and attention to the general health are essential features in the cure. Evacuation of effusion and removal of diseased tissues are often demanded.

Prophylaxis.—Proper prophylactic care depends upon a thorough understanding of the methods of infection. To prevent infection through the inhalation of germ-laden dust the sputum and all excretions of the tuberculous should be immediately sterilized or destroyed and never allowed to become dry. A consumptive should never be allowed to spit into anything but a proper receptacle prepared for that sole purpose. The sources of food should be carefully investigated, and milk from tuberculous cows, and tuberculized meat should be kept out of the market. Foods of all kinds, and particularly milk, butter, cheese, and meat, should be guarded from accidental infection. The only absolute safeguard is of course sterilization by heat. Children born of tubercular parents, or of parents whose health has been impaired, are fit subjects for the disease. Children, by their habits, are more likely to open some avenue for invasion than adults. A greater variety of things find their way into children's mouths. Infants creep-

ing around the floor with some morsel or plaything in their hands, which makes alternate trips between the floor and their mouths, open the avenue to the mesenteric glands and alimentary tract. Many of the children's ailments prepare a proper soil for the bacilli; notably is this true of catarrhal inflammations, measles, and whooping-cough. Individual prophylaxis then should include the following points:

1. Rigid quarantine from tuberculosis patients.
2. Sterilization of all suspected foods.
3. The prevention of all catarrhal inflammations.
4. The speedy cure of catarrhal inflammations when they exist, using some means, when possible, to frequently wash away all secretions.
5. The prevention of mouth breathing.
6. A regularity of habits which will be most conducive to good general health.
7. A methodical physical training, especially of weak tissues and organs.
8. Selection of a locality where the child can live out of doors the greatest possible amount of time.
9. Life in the country away from the resorts of consumptives.

The great majority of cases of tuberculosis in children are preventable, and the more one studies the disease in its various aspects, the more he will become impressed with the fact that this great scourge lives mainly by reason of ignorance and neglect on the part of both the profession and the laity.

Treatment.—In the treatment of tuberculous patients the question of feeding and environment are equally important as in the prevention of the disease. Sunshine, out-of-door life, residence in equable climates, and purity of the air are our best allies. Systematic feeding is second to nothing in importance

for the welfare of the tuberculous patients. Milk and cream, when pure, should constitute an important factor in the dietary of every tuberculous patient. Predigested milk is often a very useful food for children. Cod liver oil owes its value and popularity mainly to the fact that it contains a good animal fat. I have found the preparation of cod liver oil with *Maltine* usually palatable, and I believe it has been of value as a food for many patients.

The use of Koch's *tuberculinum* by injection has been found of value in some cases, but in others the reaction has seemed to hasten the progress of the disease; to be of value it must be used early in the disease. Personally I have had no experience with its use. Some of our physicians, notably Dr. B. S. Arnulphy of Chicago, report very good results from the use of the *tuberculinum* potentized and administered internally. Dr. Arnulphy uses it mainly in the thirtieth potency.

The injection of *iodoform* into tuberculous joints, glands, and cavities has been practiced quite extensively and has seemed in many cases to have been followed with good results. It has also been potentized and used internally in the lower potencies by some members of our school. Good results are claimed by many observers, especially in joint affections.

The *hypophosphites of lime, soda, and potash* have been in use for years and are of undoubted value, in the incipiency of the disease, as constructive agents. It is far preferable to select the one which meets the requirements of the individual case and prescribe that alone in a simple form, as a trituration, than to employ the trade compounds in the market.

Of late, preparations of blood-elaborating glands and constructive organs, as the pancreas and bone marrow, have been quite extensively used. I have used the preparation known as *protonuclein* in a number of cases during the past year, including tuberculosis of the cervical, bronchial, and mesenteric glands, tuberculosis synovitis, and incipient pulmonary tuberculosis. It has not been used to the exclusion of homœopathic remedies, and therefore its value in these cases is problematical. They have been mainly hospital cases, unfavorable subjects under constant observation, and the results obtained have in many instances been very gratifying. I am impressed with its value, to the extent that I am at present using it alone in two cases; one a tuberculous synovitis of the knee, and the other tuberculous cervical and tracheal glands.

Any form of local treatment which rids the tissue of necrosed matter, excessive secretions of bacilli and their toxines is of value, if it does not introduce any disease producing influence. This is equally true whether glands, joints, cavities, or mucous surfaces are involved.

The value of well-proven homœopathic remedies in tuberculosis has been firmly established and is of far greater importance, so far as medication is concerned, than anything else that can be recommended. *Iodine* and its compounds stand out pre-eminently first. *Sulphur* and *calcarea* and their compounds probably rank next in their frequency of use. I shall not undertake to give any directions for their selection, for we all know where to look for such information, and there is nothing new to offer.

CHAPTER III.

REFLEXES.

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Two forces are constantly exercised in the human organism, viz., reproduction and destruction. The former is carried on by all the great functions of the body,—digestion, absorption, respiration, circulation, and secretion, each an important and essential factor in the one great act, nutrition, which not only creates the anatomical elements of a new being and constantly repairs, or strives to repair, those of an existing organism, but also, at the same time, stores within these elements a potential energy that is invariably liberated and set in action to reproduce and to destroy. If the power which liberates, renders active, and controls this energy or force be neither too great nor too small,—just sufficient to maintain a proper co-ordinate organic action, then in the body will production be equal to or in excess of destruction, thereby resulting in health and physical develop-

ment; but if an insufficient amount of this latent energy be changed to active force or work and heat, then a slow, insidious degeneration of one or more tissue elements occurs, often, however, preceded by diminution of functional activity. If an amount in excess of the maximum permissible in constructive metabolism be changed into kinetic energy, then the physiological acts and anatomical structure of the tissues are rapidly modified and altered.

Health then is the production of potential or reserve energy, and the proper expenditure of the same; disease is a failure either to develop this force or to expend it in the harmonious activity of all the elements, tissues, organs, and functions of the body. Disease is chronic or acute, either as an insufficient or an excessive amount of energy at rest is changed to activity. The development of this force and the regulation of its expenditure therefore come within the province of the physician. Those forces which liberate other forces are known as stimuli. They may be either chemical, electrical, mechanical, psychical, or that negatively defined force known as vital, which last, in children at least, depends upon heredity. Because of their anatomical connection by means of the nervous system, no organ, or at least no visceral organ, is independent of any other; hence, a natural stimulus applied to one directly or reflexly, influences the normal action of another, providing one or more of the factors essential to a reflex movement be not destroyed, even though they may be impaired. It is therefore a logical deduction, that if the liberating force and the three factors of a reflex arc, the center

of reflexion, the centripetal and centrifugal fibers, be normal, the body will be in a state of health.

Reflex phenomena depend upon the condition of the reflex arc and the character of the stimuli, most frequently upon the transferring center of the arc located either in the sympathetic ganglia or in the cerebro-spinal centers. If the center, the cause of action or inaction is central; if the stimuli, peripheral. In a crude manner the reflexes, especially that of the patellar-tendon and next the ankle clonus, have been used as means of diagnosis to determine well developed abnormal conditions.

I believe the time is not far distant when it will be possible to determine, probably by the aid of electricity and suitable apparatus, the minimum and maximum amount of energy necessary in the transferring centers to maintain the proper degree of harmony in organic action. Then will it be possible, by an earlier diagnosis than it is now possible to make, to prevent the development of some of the incurable neurotic and reflex diseases.

In Pneumonia.—Perhaps in no other form of acute disease, especially in children, is the energy of the reflection center reduced below the minimum of health, or even exhausted, as in catarrhal pneumonia,—one of the most serious diseases of early life. The cough often ceases though there be no improvement in the pathological condition, and there may even be an extension to and an involvement of other lobules of the lungs. The inflammation produces the stimulus, the energy which, transmitted by the superior and inferior branches of the vagus, in

this case the efferent fibers, to the cough center, liberates a force that is conveyed by the efferent fibers in the nerves of expiration to their periphery, resulting in cough. Then, if the inflammation be the stimulus and it is not abated, why does not the patient continue to cough and by that means prevent an occlusion of the smaller bronchi by an accumulation of mucus? The potential energy of the transferring center has become exhausted, hence there is no power for the stimulus to discharge through the efferent fibers of the reflex arc to the contractile tissue involved in the production of cough. This condition is critical and often followed by death. The practical lesson to be drawn from this experience and the results of its development is to sustain the vigor of the cerebro-spinal axis, in which is found the cough center, by remedies acting upon it and thereby prevent its exhaustion, which is so frequently followed by fatal results. The statement that this may be done is corroborated by clinical experience. No drugs will be mentioned, as it would doubtless lead to a discussion of the general treatment of this form of pneumonia, which is not within the scope of the paper. It will occur to all that in many cases of this disease the cough does not suddenly cease, but gradually subsides with the abatement of the pathological condition; it is so because the potential energy of the reflex cough center has not become exhausted either by the involvement of a large area of lung tissue or by constitutional dyscrasia.

Because the organs are interdependent (?) in action, their reflex influence should be considered in the

treatment of any one of them, not only in chronic but in acute diseases.

Digestive Sphere. — While improper food is doubtless the most frequent etiological factor in the production of diarrhœa of children, yet there are not a few cases of this disease that are caused, not by direct irritation of the digestive tract, but by reflex influences. The power of intense mental conditions to produce greatly exaggerated peristalsis and involuntary defecation has been frequently noticed, especially from fright or any other sudden abnormal mental action. Diarrhœa is also caused in infants by changing the material composing the garments worn next to the skin. This is frequently observed when, even in the hot temperature of July and August, the clothing worn next the skin is changed from woolen to cotton goods. I have often seen cases originating from this cause rapidly cured by replacing the cotton by the woolen garment. It is a well attested fact that sudden atmospheric changes are productive of increased sickness and frequently increase the intensity, especially in this latitude, of gastro-enteric disorders during the month of September. Unseasonable weather, that is, a cold summer and warm winter, is accompanied with an increased amount of sickness. This is not brought about by any direct local atmospheric effect, either mechanical or chemical, upon the tissues involved, but by a change of stimuli acting on the peripheral nerve terminations, probably of the integument, thereby either diminishing or increasing the power of the inhibitory and motor centers, and therefore changing

their reflex energy, resulting in functional and organic changes of organs subject to their influence. It is not an uncommon experience in the treatment of gastro-enteric diseases of infancy to be annoyed and chagrined by frequent recurrence of the attack in the same cases, notwithstanding the diet and remedies have been selected with the greatest care and skill. As impaired glandular secretion, both in quality and quantity, and hyperæmia and inflammations may be caused by the reflex influence of a cold draught acting on some portions of the skin, it is logical to conclude, especially as clinical results verify the deduction, that intelligent care of the surface of the body will prevent its undue stimulation and therefore protect from deleterious reflex influences the already weakened digestive organs and prevent frequent relapses of diarrhœa in children. Diarrhœa again may be produced, not by direct irritation of the intestinal canal by the presence of indigestible food, but by reflex mental influences. The power of intense mental conditions to cause greatly exaggerated peristalsis and involuntary stools has been frequently observed, especially from fright. Cases of constipation also may result from the same mental influences that in others, by reflex action, are followed by diarrhœa. Why the same exciting cause is followed by an over-action in one person, an insufficient action in another, and of no effect in a third, is doubtless due to the different conditions of the reflex arc and the influence of the stimuli, not only upon the motor but the inhibitory centers. If the resistance of the former were decreased and the latter unchanged, then diarrhœa

would follow; if the *vice versa*, constipation; but if they were both active, and no relative change in their resisting power, the stimuli would produce neither constipation nor diarrhœa.

The delicacy of the mechanism of the reflex structures, and the many changes their action may produce in the character of a disease, especially in diarrhœa, teach the necessity of careful discrimination in the selection of remedies which are very similar in their action. The many fine points of difference between drugs are therefore not to be ignored, especially in the treatment of diarrhœa. By teaching a more careful comparison between drugs that have a somewhat similar line of action, homœopathy has done much for medical science that is worthy of commendation.

Again, in diarrhœa it will be noticed that the indigestible food in the intestinal tract, the pathological condition of the same, or whatever other cause may constitute the stimuli, there will be in addition to the altered contents of the intestines only increased peristalsis; sometimes, however, this increased action does not occur even though the stools be diarrhœic in character. This abnormal action represents only a simple reflex response on the part of the muscular coat of the intestine; but when the discharging stimulus is very strong, or there is an excessive degree of excitability of the transferring center, then will inco-ordinate reflex manifestations exhibit themselves in the form of spasms. It has been noted by Henry Hartshorne, M. D., that more males than females die from cholera infantum. Now, as the former are not, as in adult life, more exposed to the

inclemency of the weather than the latter, and as the food and clothing are the same for both sexes during infancy, it will be a reasonable deduction to conclude that the cause of greater mortality in the one sex must be due to some abnormal condition of the genital organs. These parts should be examined. This is not stereotyped advice given in connection with the care of cholera infantum, as all well know, but because the rate of mortality is so uniformly reported high, the physician is warranted in getting out of the well worn path of treatment which too often leads to death of the child. Of course, it is far better to ascertain, before any acute condition manifests itself, that not only are the genital, but all other organs free from conditions that will impair the normal bodily resistance. If such conditions exist, cure them if possible before they weaken the organism by their reflex influence, and thereby act as a predisposing cause of disease.

Examples of Reflex Action.—I think as a rule physicians are inclined to ignore the small abnormal conditions of the body which act as stimuli, for the reason that they do not produce acute disease or because they forget that a weak stimulus existing for a short time may not cause a reflex act; but if it be continued may produce this act. Had Nature intended to protect the body only against large *foci* of irritation, it would have made the nerves large, like the muscular system; but many of them are microscopical and ramify through every part of the body, being especially numerous in the more exposed parts of the body. They are so very susceptible to stimuli that one of their functions no doubt is to give

prompt warning of an assault, no matter how trivial, on the vital force. A small source of irritation continuously exerted decreases its power of resistance. For example, a very small foreign substance in the eye may, if not removed, cause destruction of its fellow; the presence of some indigestible substance in the intestinal tract may produce convulsions and sometimes death. Still another familiar example may be given, viz., a small piece of secundines will produce hemorrhage, not because it is large enough to prevent contraction, but because of reflex influence. If then such weak stimuli will produce serious functional derangements in adult life, it is not strange that it will have a deleterious influence in child life; and while the harm may not be manifested at once, still the loss of recuperative power so often given as a reason for not curing patients of acute disease may be due to the long continued action of a stimulus so weak that were it continued but a short time it would make no perceptible influence on the patient's health. It is to lessen the severity of acute diseases and prevent the development of those that are chronic in character, that the child should be examined for abnormal conditions at birth.

Redundant Foreskin.—Probably the most common of these in male children is the adherent and redundant foreskin. The following cases are given to show some of the different reflex conditions produced by it:

The first case showed symptoms of an imperfect gastric digestion during the first few months after its birth, which continued until cured at the age of six

years. During the second summer of its existence it had frequent acute attacks of gastro-intestinal catarrh. These attacks recurred so frequently that the child was taken on a steamer to northern Michigan. Some little improvement was wrought by the change of climate, but it was late in the fall before it was fairly out of danger of these serious acute manifestations of the disease. The stomach remained weak, imperfectly doing its work, aggravated by a diet not very carefully regulated both in regard to quality and quantity. It was also influenced by changes of temperature. Several physicians, myself among the number, treated the patient without producing any marked improvement. He was for a time under the professional charge of a specialist for diseases of the digestive organs, without benefit. Of course, acute exacerbations subsided with or without medicine. When he was six years old I was asked to prescribe for enuresis that troubled him day as well as night. Thinking there might be some local cause of this annoying trouble, I examined genital organs and found the foreskin adherent to one side of the *glans penis*. This was corrected in less than five minutes with my fingers. He had no further trouble in retaining the urine and he made marked improvement from that time. One year after his mother reported no more trouble with the digestive organs.

It is not claimed, of course, that every case of enuresis, any more than every case of indigestion, is caused by the condition described in the above case.

I was asked to examine a male child eighteen months old, an idiot; the parents were very intelli-

gent. It had been delivered by the aid of instruments. No evidence of injury could be found. The mother, wiser than some physician, in this case at least, made a comparative examination between her child and the male child of a friend. The foreskins were different. The mother reasoned that as her child was ill and the friend's well, if either foreskin was wrong it must be that of her boy. The child was circumcised and the adhesions between the *glans penis* and foreskin broken up. The child was well in two months. There was marked mental improvement during the first week following the operation.

The following are cases cured by operation on the foreskin, reported by Sayre:

Para.—"Child five years old, knees flexed at angle of 45 degrees, paralysis of extensors, pulse weak; tenotomy had been advised, but not performed. Two weeks after the operation child walked without aid and finally made a complete recovery.

"Double *talipes equino-varus paralytica* in child aged three years. Had been under treatment between two and three years in a public institution of New York. Greatly improved in two weeks after operation.

"Paralysis of lower extremities, prolapsus of rectum, and constipation. Operation June 2, could stand alone June 4, and complete recovery at the end of twelve days.

"Partial atrophy of optic nerve in man aged thirty-four years, eye trouble of eight years' duration, can only read large print and then but few minutes together. Operation restored general health in one

month and enabled the patient to read a page of small print without any unpleasant result."

Clitoris.—Dr. Sayre also reports cases benefited by correcting troubles of the clitoris. One child whom he treated was eight years old and had never been able to walk. Two months after operation she walked unaided across three rooms.

These cases are given to call attention to the fact that an irritation in the same part of the body may produce various reflex diseases in different individuals. It should also be remembered that the stimulus that *results* in great functional disturbance in a single organ in each case may in others diffuse its force to many organs, thereby slightly, in a short time, impairing them all, with no very clear manifestations of disease in any one; but by undermining the recuperative power the individual is rendered especially susceptible to any exciting cause of disease and ultimately some chronic ailment is insidiously developed.

I will give an example to corroborate the last state ment. A young lady, about eighteen years of age, had for many years of her life been subject to severe attacks of headache, the attacks gradually increasing in frequency. She was pale, listless and tired, with a poor appetite. The menses were regular and normal. She had had several acute diseases, one of which was typhoid fever. She had not since a child been considered a very strong girl by her parents. Of course, she had sought relief from physicians and taken much medicine without any apparent benefit. I was no more successful with drugs than those who had previously prescribed for her. Finally, I did what

should have been done when she was a child, examined the clitoris, and found the hood adherent. The adhesions were loosened and the patient gradually gained strength and recovered from the headaches. No drug, no matter how carefully selected, would cure such a case and it was unwise, unscientific, to administer drugs to her; and yet I have no doubt that many chronic cases called nervous prostration, general debility, or some other of the indefinite terms that physicians have taught the laity to accept as expressing something scientific, are due to a reflex irritation perhaps no greater than the one in the case just described, and which may be produced by congenital deformities.

These cases have been given to show not only that an abnormal stimulus may cause reflex disease, but also that the same stimulus produces different diseases in different individuals. Notice in these cases that the irritation caused by the foreskin resulted in chronic impairment of the stomach digestion in one subject; idiocy in another; in a third paralysis of the extensors of the leg; a fourth *talipes equinus;* a fifth paralysis of the lower extremities, constipation, and protrusion of the rectum; and in the sixth, after many years, serious impairment of vision. In other cases, with a less degree of irritation, or a greater amount of constitutional strength possessed by the patient, there will be produced less marked symptoms of disease, but none the less surely will the various functions of the child organism be impaired and predisposed to disease conditions which are entirely too common and fatal in childhood. Often Nature corrects the trouble; if she

does not the adult is invariably an invalid; but even when Nature removes the cause of irritation serious harm has been done to the child. It is not creditable to medicine and surgery that there are thousands of people in all countries where medicine is taught suffering from chronic disease. These very often may be traced back to childhood and to causes that were removable at that age.

Rectum.—Dr. Pratt has discovered and taught, and his teaching has been corroborated by all who have made clinical use of it, that the lower part of the rectum is abundantly supplied with nerves, which act as afferent fibers to a reflex arc, and that abnormal conditions of this part of the bowel are productive of many reflex disorders. He has found that dilatation of the sphincter ani is a powerful means of resuscitation and that it is the most reliable method known for starting respiration in still-born children. Since the originator of this method introduced it to the profession it has come into general use as a means of resuscitation.

A regular physician writes as follows: "The methods of resuscitation usually employed are open to various objections. They all require time, which is the all-important element in these cases. Some of them compel the use of unseemly and disagreeable measures, others of more or less cumbersome and inconvenient means, and all distract the physician's attention from the mother, who, at this time peculiarly and by every right, is entitled to that care and consideration which only the closest and most constant attention can secure to her. These are the general

objections—not to specify the many inhuman and grotesque impositions, such as spanking the baby, alternate boiling and freezing with hot and cold baths, mouth to mouth insufflation, artificial respiration, and the various other scientific indignities which are daily being perpetrated upon helpless innocence."

Of course dilatation of these sphincters must affect the respiration by means of reflex influence. If relaxing the anal muscles to an extreme degree assists respiration, then their abnormal contraction, which may be caused by the presence of a local irritant, will reflexly hinder respiration or compel the respiratory centers to expend an undue amount of energy to regulate these processes. In either case disease must result, the vital force be diminished and a chronic disease slowly developed, or an acute one rendered less amenable to treatment.

In General.—It is not my purpose to discuss rectal pathology in connection with reflexes, but I do wish to assert that it is the cause of many functional derangements which are frequently followed by organic changes. Patients do not understand why a slight irritation of the *glans penis*, the clitoris, the rectum, or the nares will produce trouble remote from its direct action, nor why the ill-effects are more pronounced than if a greater stimulus were applied to the nerve nearer its central termination. The first is understood by a knowledge of the fact that a stimulus may be so weak and of such short duration that there will be no discharge of a reflex act; but if it be continued it will produce the act. The second because stimulation of the peripheral

end of the afferent nerve more readily and thoroughly causes the discharge of a reflex act than stimulation in its course. For example, a slight continued tickling of the skin over the knee will in many individuals cause uncontrollable and hysterical laughter, while stimulus applied to the main nerve, from which this region is supplied, causes local pain only.

One of the common derangements of early childhood is constipation. The laxatives of the regular school, the homœopathic remedies, and a diet carefully selected from the many foods at the command of the physician all fail too often to cure this condition. Very frequently, after other means have been faithfully tried, the trouble has been overcome by dilatation of the anal sphincters. The same cause that will in one subject produce constipation will in another cause diarrhœa. I have seen the former cured by relieving an anal fissure; in another case the latter was cured by removing the same cause. Recently a case came under observation which had had diarrhœa for a year. The patient had from two to a dozen loose stools in twenty-four hours. Colicky pains preceded defecation, with rumbling of gas in the abdomen. There were no sharp nor severe pains in the anus, only a slight smarting or burning sensation,—nothing that resembled the usual description of the pains incident to a fissure; but nevertheless a large one existed. Local anæsthesia was produced by a solution of cocaine, then 95 per cent carbolic acid applied to the fissure; the stools became normal in one week after treatment. It should not seem strange to the members of our school of medicine that different conditions, or rather oppo-

site manifestations of the same condition, respond to the same remedy. It may be explained by the difference in the discharging power of the center of the reflex arc.

While calling attention in a general way to the important influence that stimuli may exert in a reflex manner on remote organs of the body, it is in nowise intended that other causes of disease should be ignored, for it would be foolish to treat a disease due to central conditions alone as a reflex disorder. I believe, however, that many chronic pathological conditions which seem to be primary are due to long continued impairment of important processes of the body due to reflex influences that permit the development of these diseases which become independent and do not disappear after the exciting cause is removed. The importance of a thorough examination of a child cannot be overestimated. All abnormal stimuli should be corrected if the danger incident to child life be reduced to a minimum, and the increase in the great army of chronic sufferers be stopped.

CHAPTER IV.

DISEASES OF THE BRAIN, INCLUDING CEREBRO-SPINAL MENINGITIS.

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SIMPLE MENINGITIS.—Etiology.—The simple non-tubercular inflammation of the pia mater is most generally localized at the convexity of the brain. It rarely occurs primarily and is most frequently induced by other diseases, as, for instance, by caries of the petrous portion in otitis media, facial erysipelas, eczema on the head, affections of the nose, and pyæmic or septic processes, the latter especially in the new-born. It also occurs after operations and injuries of the head, and follows various acute infectious diseases, mostly pneumonia, scarlatina, measles, or endocarditis, nephritis, and peritonitis.

Morbid Anatomy.—Anatomically we find a yellow or greenish-yellow fibrinous exudation in the meshes of the pia mater, which often covers a large area, especially on the convexity. The blood vessels are markedly injected, and the membrane shows serous infiltration. The substance of the brain underlying the affected parts may also show signs of inflamma-

tion, which may extend to the base, the medulla oblongata, and continues down into the spinal cord. If the origin has been traumatic, the dura mater will also participate and the sinus will appear hyperæmic. Purulent infiltration has been observed along the course of the larger vessels of the pia mater, and adhesions to the brain and arachnoid are found in many places; the ventricles are generally found empty.

Symptomatology.—The disease frequently begins suddenly; drowsiness, headache, vertigo, or vomiting rarely precede it. Most generally we find a quick rise of temperature, which remains high throughout, frequently above 104, great restlessness, grinding of the teeth, then vomiting, with severe convulsions, set in. These symptoms are accompanied by sharp cries while the child is entirely unconscious, and no external impressions will be able to rouse the child from this comatose state. This coma may be interrupted at intervals by delirium or spasms. The pupils are mostly contracted, sometimes irregular, and the eyeball is rolled upwards, sometimes oscillating. The head and face are hot, and the child grasps his head with his hands and throws himself about. The *fontanelle* protrudes, showing strong pulsations. Pulse and respiration are accelerated in the beginning, becoming slower later on. The bowels are constipated whilst the abdomen is soft and often retracted. In cases ending fatally the convulsions repeat more and more rapidly, being followed by paralysis of one or more extremities during increasing coma and enlarging pupils. Shortly before death, which may occur within one or two days, the pulse will become very

rapid. Sometimes, when the disease develops more slowly, we will have incipient symptoms, consisting of irritability, peevishness, or an apathetic state of the mind, restless sleep, and spontaneous vomiting; tremor and light twitchings of the extremities are then observed during gradually increasing drowsiness, and in this condition older children complain of continuous headache. Suddenly a chill followed by high fever, delirium, and convulsions set in, which are then succeeded by coma and the symptoms as described above. If death does not occur at such a climax, we will notice a gradual decrease of the symptoms, and the disease may take a protracted course lasting for several weeks. The sensorium remains dull during all this time, the fever keeps on, paralysis or contraction of single sets of muscles, as well as isolated spasms, appear, during which the patient may succumb under sudden coma and general collapse. During this protracted course emaciation becomes excessive.

If the meningitis is marked by the disease causing it, all of these symptoms are not plainly apparent. Sometimes especially the convulsions are wanting, or they are substituted by contractions, or they may just appear toward the end. High fever will likewise be absent, and the patient will recover from the soporous condition; but delirium, vomiting, and the contraction of the pupils will almost always be observed.

The duration of the disease is, as a rule, but a few days, rarely longer than a week; young infants may succumb in as many hours; it rarely lasts from two to three weeks. According to old school authorities, the usual termination is death, and in the cases

reported cured in our literature, it has been preferred to doubt the diagnosis rather than to admit success, for that is the easiest way of ignoring the superior efficacy of homœopathy. Children who survive may show serious affections remaining after meningitis, the same as we find in the cerebro-spinal form.

Diagnosis.—It is often difficult to distinguish meningitis at a time when it enters as a complication upon another disease, especially in such cases where its development is slow and where all the prominent symptoms are not present. The further course of the case will then clear the diagnosis. The differentiation from typhoid consists in the late appearance of nervous symptoms in the latter, the more typical fever curve, the roseola, and the enlargement of the spleen. We may consider Kering's symptom, consisting in the involuntary forced flexion of the knee joint, which sets in immediately when the child rises in bed, or when lying on its side on flexing the thigh upon the abdomen, as an important diagnostic point, although not a pathognomonic one, which distinguishes simple meningitis from other affections of the brain. The prognosis in undoubted cases is rather unfavorable.

From what has been said regarding the course and diagnosis of meningitis, it will be apparent that much of the physician's success depends upon the early recognition of the true character of the disease.

Treatment.—The homœopathist, however, following closely the picture his patient presents in its minutest details, will not long be puzzled as to the selection of an appropriate remedy, even before he has decided upon the distinct variety of the affection

under treatment; but he will make his diagnosis as speedily as he conscientiously can. Fortunately the homœopathic remedy has to correspond simply to the symptoms present in the case, for these are the only tangible means to arrive at a scientific medicinal treatment. Thus no time will be lost, nor injury done by injudicious or unsuitable means, and life is frequently saved by such prompt interference, which will always be correct as long as the physician abides firmly by his law of cure. External application of the ice bag I consider worse than useless, for besides the restlessness of the patient making it impracticable, the contraction of the external blood vessels by cold helps to increase the tension inside the cranium. It is wise, however, to keep the patient in a cool room, in perfect quiet, and under subdued light, on account of the hyperæsthesia of the senses. In advanced cases, when increasing stupor or any paralysis is observed, it is important to see to the patient's nourishment, and to administer per rectum, if swallowing has become impossible.

The condition of the ears should always be carefully ascertained from the beginning, and if an otitis has shortly preceded the meningitis, or if a bulging of the tympanum indicates the possibility of retained pus, free evacuation should be secured by proper means.

Of the remedies needed in simple meningitis, *belladonna*, *apis*, *gelsemium*, *helleborus*, *cicuta*, *cina*, *opium*, *stramonium*, *veratrum viride*, and *zincum* stand foremost. *Aconitum*, *apis*, *belladonna*, *bryonia*, *cuprum*, *ferrum phosphoricum*, *hepar*, *mercurius solubilis*, *pulsatilla*, and *sulphur* are valuable when meningitis occurs

during or after the eruptive fevers, also during or after otitis media or mastoid disease. *Arnica*, *glonoine*, *hepar*, *hypericum*, in traumatic cases or after long exposure to heat. *Æthusa*, *anacardium*, *cantharis*, *cimicifuga*, *digitalis*, *nux vomica*, and a few others will be indispensable under suitable conditions.

TUBERCULAR OR BASILAR MENINGITIS.—Pathology.—This form of meningitis, which formerly was wrongly designated as acute hydrocephalus, consists in the appearance of miliary tubercles in the meninges, plus an inflammation of the pia mater which is localized at the base of the brain, and is usually accompanied by an acute exudation into the ventricles. The pathogenesis of this condition is identical with that of general tuberculosis, and appears frequently secondary to systemic tubercular affection. Only in very isolated cases tubercles have been found in the meninges primarily, and were then limited there.

The most frequent starting points for this form of meningitis during childhood are, therefore, pulmonary tuberculosis, caseation of the bronchial or cervical glands, and conditions especially predisposing for this disease, most prominently measles and whooping-cough. Occasionally we find tubercular infiltration of various lymphatic glands and tubercular inflammation of the bones and joints to form the centers of infection. Tubercular meningitis is rather frequent in children, attacking most particularly scrofulous subjects and those hereditarily inclined. Boys at from one to four years of age are the most frequent victims, while the frequency decreases as the age advances. The exciting cause in such cases will often be an in-

jury to the head or mental strain. In many tubercular families several, perhaps all the children may suffer from meningitis; in others, the first born only.

Symptomatology.—Most cases are preceded by ill health for several months, perhaps succeeding an attack of whooping-cough or measles, during which time the child has markedly wasted. Indigestion, but more frequently cough with fever and nightly exacerbation will sometimes arouse our attention, especially if we find glandular enlargement, and a tubercular family history. Again, brain symptoms will precede the actual attack of meningitis for weeks and consist in headache, squinting, staggering, extreme irritability, great change of disposition, and loss of control over the sphincters; this will generally be accompanied by drowsiness, and transitory fever with thirst. All these symptoms may occur in groups or single, and may again disappear, so that but little importance is attached to them. But soon more definite signs mark the onset of the disease, that of *brain excitement*, in which vomiting is most prominent, frequently continuing for several days, notwithstanding careful diet. The tongue remains clean, but there is much nausea and retching; the vomiting is generally erratic, coming and going without apparent cause. Characteristic cerebral symptoms may yet be absent. Constipation is the rule; the abdomen becomes flabby and later retracted. Soon headache, then giddiness set in, indicated in young children by their grasping the head, moaning and whining, with intolerance of strong light and noise. The child is now feverish and extremely

irritable, it will not be disturbed by anybody, but clings to its mother for attention. In other cases, the headache, staggering gait, and dizziness may be there from the start, while vomiting is less prominent. Sleep is disturbed by vivid dreams and grinding of the teeth, out of which the child awakens with a piercing cry, known as the "*cric hydrocephalique.*" It prefers to lie quiet and undisturbed, and will not be amused or play with its toys. It will also complain of pain in the ear, throat, abdomen, or extremities. In young infants the *fontanelle* will bulge. Even at this early period of the disease the pulse begins to become irregular, varying in frequency, becoming gradually slower, but increasing again later on. This does not correspond with the temperature curve, which is very uncertain throughout the disease, jumping three or four degrees within twenty-four hours, generally lasting longer on a high mark, however. Respiration also changes in regularity, being alternately superficial and deep, sighing. In the beginning the patient will give short answers to questions, but he soon becomes more apathetic and indifferent even to bodily examinations. A soporous condition supervenes, interrupted by periodical restlessness, delirium, and piercing cries. At the same time we observe photophobia and sensitiveness to sound and slight touch, also automatic sucking and chewing motions. Many children bite or snap and make pendular movements with one or another extremity; some bore their nose incessantly, others grasp about the lower abdomen and genitals. Twitchings, muscular contractions of the neck and back, or convulsions will now appear,

which, when general, may bring about a fatal result, especially in infants. Paralysis involves the muscles of the eyes, lips, face, or limbs of one side. Rolling of the head from side to side is a frequent symptom; and in some cases the contraction of the neck is so extreme at the same time, that the back of the head touches the spine, amounting to complete opisthotonos. Consciousness continually diminishes, the patient can only be roused by loud calling, and will then take a little nourishment, which is otherwise refused. He mostly lies quiet with eyes half closed, the bulbi rolled upwards, the conjunctivæ injected; at the same time strabismus, with alternating contraction and dilatation of the pupils, is common. There is apt to be incontinence of the urine and stool. Gradually this state changes into one of complete coma, from which the child cannot be roused. The conjunctivæ become insensible, the pupils more dilated. This condition admits an examination of the optic discs, the edges of which appear blurred and indistinct from the presence of swelling; the veins are distended and tortuous. Should general tuberculosis be present, this may also be detected in the choroid. The pulse now becomes permanently accelerated and regular, but weaker and often hardly perceptible; and the respiration presents more clearly the Cheyne-Stokes character. The face is pale, the extremities are cool and clammy, while the temperature in the rectum is very high or subnormal. The body appears much emaciated, the skin dry and harsh. Excessive secretion takes place from the conjunctivæ, so that the eyes become covered with a veil of mucus or pus. The tongue presents a thick

brown coating, there are sordes on the teeth, and black crusts on the lips. This state may last for several days, even a week, being interrupted by convulsions, tremor, opening and turning the eyes; then gradually passing into a moribund condition.

A typical picture of the disease is by no means always found, especially in young infants, in which the characteristic symptoms may be absent and no diagnosis is made until the child is comatose or actually dying. The division into stages, as was formerly the custom, is therefore not practical. There may have been vomiting of food without any further indication of illness, then some rigidity of single groups of muscles will set in, and gradually sopor and coma follow. In other cases, nervous symptoms supervene. The state of the fontanelle will be of some help in the diagnosis, for it will always be full and bulging, and later on the veins on the forehead will swell more prominently.

The duration of the disease varies greatly according to the multiplicity of the symptoms, a combination with other diseases, and the age of the patient. Most cases die within three or four weeks, but convulsions may prove fatal during the first week. The course is short when occurring in addition to pulmonary tuberculosis; it is also short in young infants when beginning with convulsions which rapidly pass into coma.

Diagnosis.—Cases which develop gradually, and where tubercular affections are present in remote organs, are not difficult to diagnose. Ophthalmoscopic examination will lead to a positive result if choroid-

tuberculosis can be demonstrated, but a negative result cannot be relied upon. Marked gastro-intestinal symptoms will obscure the diagnosis, especially in well nourished children. The same is true with reference to simple meningitis, which is sometimes difficult to distinguish from the tubercular form; the rapid onset with continuous high fever speak for the former, a slow development and less intensity of the premonitory symptoms for the latter. Cerebro-spinal meningitis must be thought of when a number of cases appear epidemically, an eruption will give additional evidence. The temperature curve and the character of the pulse will help to differentiate typhoid fever.

The prognosis in true tubercular meningitis is always grave, though not hopeless, but even if apparent improvement sets in, and if such cases recover from the meningeal affection, the tubercular process will lead to a fatal termination sooner or later.

Treatment.—In addition to the care of the patient during an attack of meningitis, as given above under the simple form, we may speak of a *prophylactic treatment* in tubercular meningitis. This should be much the same as that of general tuberculosis. Children with a tubercular diathesis require the utmost care throughout. Their systems should be invigorated by out-of-door life, they should pass their summers at the sea-shore or at the mountains, and should be carefully protected from changes of weather at all seasons. Pure milk and cream will be the best basis for their food. All mental excitement must be strictly prohibited, and they should be kept from even the sim-

plest kind of book learning. *Arsenicum iodatum*, *baryta carbonica*, *baryta iodata*, *calcarea carbonica*, *calcarea iodata*, *calcarea phosphorica*, *silicea*, *sulphur*, *psorinum*, *tuberculin*, according to constitutional indications, will greatly aid to improve the child's health and thus tend to avoid the possible outbreak of the disease. For the treatment of tubercular meningitis the same remedies as in the simple form will prove efficacious. Besides those we may select from the following: *Apocynum cannabinum*, *argentum nitricum*, *artemisia vulgaris*, *calcarea carbonica*, *calcarea phosphorica*, *iodium*, *iodoform*, *kali iodata*, *spongia*, *squilla*, *tabacum*, *veratrum album*.

CEREBRO-SPINAL MENINGITIS.—This affection is also known by the names of cerebro-spinal fever, epidemic cerebro-spinal meningitis, spotted fever, etc. It generally occurs epidemically, sometimes sporadic cases are observed, and in large cities it has become endemic. The contagious nature is but feebly expressed. A few instances have been recorded where direct infection could be traced absolutely. We will, therefore, consider it an acute infectious disease generally epidemic, localized in the pia mater and arachnoid of the brain and spinal cord. It chiefly attacks children up to five years of age, less frequently older ones to about the age of puberty. After thirty years of age it has not been observed except in isolated cases. Males are more frequently subjected than females.

Epidemics occur especially during winter and spring; improper hygienic surroundings, damp and crowded dwellings being the most frequent breeding

places. Considering the nature of the contagion the Fraenkel-Weichselbaum coccus, which is identical with the pneumo-coccus, is generally accepted as the cause, especially as it has been found by many competent observers in the exudation of this form of meningitis, and experimental meningitis and encephalitis have been produced by the pneumo-coccus. The entrances for these cocci are most probably the nose, the frontal sinuses, and the middle ear. But why it pleases this micro-organism to sometimes produce pneumonia and sometimes an epidemic of cerebro-spinal meningitis remains still a mystery which it will not be difficult to solve for the ever ready bacteriologist.

Anatomically we find acute inflammation of the pia mater and the arachnoid, with sero-fibrinous or purulent exudations. These are especially found in the arachnoid spaces, and abundantly at the base of the brain, also on the convexity in the fissures between the convolutions, and upon the spinal cord mostly on its posterior surface. Adhesions are formed between the upper layers of the brain and spinal cord and their pia mater. The substance of these tissues always shows inflammatory infiltration, with hyperæmia of the deep blood vessels. The ventricles of the brain and the spinal canal appear enlarged and filled with a turbid, serous, or purulent fluid. We also find changes in organs presenting complications, most frequently in the lungs and kidneys; more rarely do we find suppurative affections of the eye and middle ear.

Incubation and Symptomatology.—The period of incubation is but short, not exceeding five days.

The commencement of the disease is preceded by a few prodromal symptoms, consisting of general malaise, pains in the head and extremities, loss of appetite, and pronounced restlessness. But the attack may begin suddenly with vomiting and convulsions, instead of which older children complain of chills, which are followed by intense headache, staring look, with contracted pupils, and stiffness of the neck and back. These symptoms are followed by drowsiness or complete loss of consciousness; the restlessness is greatly increased and accompanied by loud piercing cries, tonic spasms or tremors, and an extraordinary hyperæsthesia of the skin. The child lies with its head drawn backwards by contractions of the muscles of the neck; these as well as the whole back are extremely sensitive to pressure or even touch. The pulse is sometimes slow, but generally accelerated; respiration shows increased frequency. Constipation is the rule, and the spleen is often swollen. The temperature rises from the start, but shows great and constant fluctuations during the duration of the disease. The further development of cerebro-spinal meningitis, after these first symptoms have made their appearance, varies greatly. In most cases we have, in addition to the symptoms mentioned, tetanic spasms, followed by deep coma, during which the respiration is sighing, irregular, sometimes presenting the Cheyne-Stokes' pnenomenon, and death is caused by paralysis of the respiratory center. Other cases, designated as the fulminant form, begin with the most severe brain symptoms, which are followed at once by coma, and die inside of a few hours. In the third variety the

course is more protracted, presenting an intermittent character with repeated relapses. The duration may then cover six to eight weeks, or longer, and the result be more favorable. But even here a fatal termination is frequently observed or serious *sequelæ* remain, and extreme emaciation occurs under these circumstances (Klebs). Again, cases have been observed during certain epidemics, which present an abortive form of the disease. These generally begin suddenly with high fever, delirium, and contraction of the neck; in some of these, the fever being mild or absent, a speedy, favorable termination will result, In the more protracted cases of this form, we observe a line of symptoms of cerebral and spinal origin, consisting in irritation and paralysis of the muscles of the eye, producing strabismus, nystagmus, ptosis, and irregular pupils. Also disturbances of the special senses, like tinnitus, deafness, transitory blindness, optical neuritis, otitis media, etc. Besides these we find contractions of the muscles of the face accompanied by stiffness of the sterno-cleido-mastoid, opisthotonos, etc. Radiating pains in the extremities are frequent as well as contractions of the flexors; also hemiplegia and aphasia are frequently observed. The tendon reflexes and those of the skin may be increased or decreased, or entirely absent. Accompanying symptoms may be found in spasm of the bladder, labial herpes, diffuse or spotty erythema, and in severe cases, petechiæ. Epistaxis is frequent, also swelling of the joints and diarrhœa. Nephritis and diabetic complications are rare; the urine is generally normal in quantity, but frequently contains albumin.

Amongst the *sequelæ*, hydrocephalus, deaf-mutism, deafness, blindness, psychical weakness, and various neuralgias are most prominent.

The diagnosis is not difficult as long as the disease occurs epidemically. In sporadic cases the initiative stage may leave some doubts, but the characteristic symptoms, which will soon follow, will clear this up. Nevertheless comparison should be made with *simple meningitis* and *typhoid fever*. The course of tubercular meningitis is usually more tardy, and the emaciation preceding this affection, as well as the family history, will make its exclusion easier.

The prognosis is always doubtful, especially with young children, and in fulminant cases. Protracted illness will prove less dangerous to life, but it may leave serious and lasting disturbances.

Treatment.—The most appropriate remedies in this affection well be *aconitum*, *belladonna*, *gelsemium*, *cicuta*, *apis*, *cimicifuga*, *crotalus*, *cuprum*, *argentum nitricum*, *hyoscyamus*, *natrum sulphuricum*, *opium*, *stramonium*, *tabacum*, *veratrum album*, *veratrum viride*, *zincum*. Besides these the study of the following remedies will be required in some cases: *Bryonia*, *helleborus*, *camphora*, *cannabis indica*, *cantharis*, *digitalis*, *hydrocyanic acid*, *hypericum*, *ignatia*, *lycopodium*, *nux vomica*, *phosphorus*, *plumbum*, *rhus toxicodendron*, *solanum*, *sulphur*, *tuberculin*.

Since the disease occurs epidemically, and on account of its infectious nature, however slight, it will be necessary to isolate the patient. He is best kept in an airy, ventilated room, which is sufficiently darkened and away from all noise. Evacuations and

refuse matter must be speedily disinfected and removed. Strict observance of sanitary rules in the household, and by the local authorities, in places where an epidemic has entered, will soon check its progress. I have more confidence in the effect of a well selected remedy than in all adjuvants, as baths, packs, etc., for the extreme hyperæsthesia of the patient commands the most tender care as to rest and quiet. Water may be freely administered, and if it becomes necessary, nutritious fluids will have to be injected into the rectum.

CHRONIC HYDROCEPHALUS.—This condition is characterized by an accumulation of an excess of fluid in the ventricles of the brain or intermeningeal; and this may be either congenital or acquired. The causes for the congenital form are not known, though it is frequently found to occur in various children of the same family. Congenital rickets, syphilis, and deprivation of the parents are said to favor its development. The acquired form shows itself sometimes soon after birth when it may have started intrauterine; or it begins after the closure of the *fontanelles* as the sequel of an acute meningitis. Congenital defects of the heart, producing stagnation in the cerebral circulation, have been found causative, as well as severe attacks of whooping-cough, which lead to a similar stasis by repeated passive congestion.

Symptomatology.—The congenital hydrocephalus, like the one acquired early in infancy, shows a uniform enlargement of the cranium, markedly out of proportion to the small size of the face. The frontal bone projects forward, the occipital almost

horizontally backward. All the flat bones are more or less thinned, except the frontal and parietal eminences, which are thickened. The sutures are wide open, the *fontanelles* very large and fluctuating. The bones at the base appear more shallow, also the roofs of the orbits are depressed. If hydrocephalus develops after the bones have become united, the enlargement of the cranium is less rapid, but the bones may separate again. In meningeal exudation the cortex of the brain is very anæmic, and the convolutions are widely separated by the enlarged fissures. The cerebellum, the spinal cord, and the cerebral nerves usually remain normal. Ventricular exudation enlarges mainly the lateral ventricles, giving the brain the appearance of two soft fluctuating bags. The fluid is generally clear, of a slightly yellowish-green tinge, and contains very little albumin. The bodies of hydrocephalic children are but poorly developed, and show a great contrast against the enormous head; they are emaciated, the muscles are flabby, the skin is dry, the upper extremities, however, grow inproportionately long. The head cannot be carried in an erect position, and the face looks even smaller on account of the emaciation. The eyes are staring, and sometimes protrude on account of the pressure upon the orbits; strabismus and ptosis appear in addition. Vision is sometimes impaired, but the rest of the senses seem normal. The mental development is naturally retarded, but not in all cases, and the child articulates imperfectly or not at all. Sometimes such cases become totally idiotic. The upper extremities are capable of making voluntary motions which show a

slight choreic character, while the lower ones are in a somewhat paretic state. The child has a swaying gait and will frequently fall, mostly forward. Regional convulsive attacks, laryngismus, and contractions of groups of muscles are by no means rare. Circulation, respiration, and digestion are normal. Paralysis of the bladder or rectum have been observed in isolated cases; but headache, restless sleep, and mental irritability are frequent.

Prognosis.—The course of hydrocephalus is generally very chronic, and only children having a large amount of accumulation at birth will soon die. Most cases will last for months or years, complicated by occasional symptoms of acute meningitis, which attacks are followed by increased effusion. Death is caused by paralysis due to brain compression, or by convulsions and coma; these latter conditions are found to be due also to hemorrhages in the brain, or to acute meningitis. Pneumonia, entero-colitis, and eruptive fevers will likewise prove fatal. Should the effusion cease to increase, the patient may survive, but will most generally remain idiotic. Spontaneous discharges of the fluid through the ears, nose, orbits, or *fontanelles* have been occasionally observed; they are possible consequences of an injury, and may lead to recovery.

Prophylaxis.—In a disease, which in most cases is brought into this world with the birth of the child, a prenatal prophylactic treatment in suspected cases may be of greater value than the doubtful trials of restoration afterwards. The care of the mother, who has given birth to a hydrocephalus previously, may

prove beneficial, and the systematic administration of *bone salts* in the third centesimal trituration during the time of beginning and advancing bone formation, up to the eighth month of pregnancy, has had good results in my hands on various occasions. The occasional prescription of a high potency of *psorinum*, or *syphilinum* in suitable cases, during pregnancy, will likewise be advisable. The effect of such treatment is often surprisingly good, and no possible harm can result from it.

Treatment.—A case of chronic hydrocephalus will prove a great test for the extent of maternal love and devotion; for such a child, in an advanced state of the disease, is a helpless and pitiable individual, the more so the older it grows. Local treatment, as bandaging with adhesive or elastic straps, or "tapping," has given little encouragement and often proved dangerous. Constitutional treatment, corresponding to that of rhachitis, is most beneficial, and the remedies useful there will do everything that may tend to a gradual improvement of hydrocephalus. The most suitable remedies, therefore, will be *baryta carbonica*, *baryta iodata*, *calcarea carbonica*, *calcarea phosphorica*, *sulphur*, *phosphorus*, *helleborus*, *thuja*, etc. Acute conditions which arise during the existence of hydrocephalus will best be met by the treatment specified under the respective affections. The best possible hygienic methods should be employed to improve and sustain general health, and all possible annoying influences avoided.

CONVULSIONS (*Eclampsia*).—By eclampsia, or infantile convulsions, we understand more or less gen-

eral clonic and tonic spasms, occurring in attacks, accompanied by unconsciousness, and without an anatomical lesion of the brain. It is therefore a direct or indirect reflex irritation of certain motory centers. Eclampsia is very frequent in the first years of life, especially during the first eighteen months. The undeveloped state of the infant's brain, and the consequent imperfection of the controlling or inhibitory centers, predisposes most extraordinarily for the marked tendency to convulsions during this early age. The causes for such a convulsive explosion are many. Direct brain irritation may be produced by active and passive hyperæmia, or by anæmia of the brain, hydrocephalus, pressure during birth, toxæmia from general infection, high febrile temperature, uræmia, etc. Reflexes may follow all possible disturbances in the gastro-intestinal canal, the genito-urinary organs, or sudden impressions upon sight or hearing, even grave emotional disturbances of the nursing mother, etc. Many children are predisposed either by rhachitis, weak constitution, or heredity. The latter cause predominates on account of parents being neuropathic, syphilitic, or intemperate.

Symptomatology.—The attack occurs suddenly, sometimes preceded by irritability, restlessness, or loud cries; the following symptoms varying greatly in intensity. They may consist in simple jerks of single muscles or groups of muscles in the face, eyes, or extremities. These occur mostly in young infants from irritation of the digestive organs. A marked convulsion frequently begins with a spasm of the glottis, as if the child were choking; or rolling of

the eyes upwards with twitching of the face and hands. The face turns pale, the eyes are turned upward, the pupils enlarged. There is twitching in the face while the jaws are clinched, or there may be a chewing motion with grinding of the teeth. The child becomes unconscious during the attack, there is stiffening of the whole body, interrupted respiration and consequent blueness of the lips and face. This picture quickly gives way to clonic spasms, and after a few repeated jerking contractions of the hands, feet, and face, the child passes into an exhausted quietude, during which respiration becomes regular, and thus the attack is ended, which may have lasted but a few seconds or minutes; a dazed condition remains for some time longer, however. More severe convulsions will give a close resemblance to an epileptic fit. The entire body will then be involved and will be almost thrown about by the forcible muscular spasms, while in other cases lasting tonic contractions will produce opisthotonos. The muscles of the extremities take active part, the face is distorted and cyanotic, froth will appear at the mouth, which may be bloody from the patient biting his tongue. Respiration is labored, unconsciousness complete, stool and urine are passed involuntarily. These severe attacks, which may last from two to fifteen minutes, pass off in the manner of the lighter ones, the child falling into a quiet slumber, remaining somewhat exhausted and soporous for a short time.

Several such attacks may follow each other after longer or shorter intervals for one or more days. But if the cause is a gastric disturbance, an evacua-

tion of the bowels, or an attack of vomiting during the first convulsion, may overcome the condition and no further repetition of the convulsions will occur. Severe attacks do not always end favorably, for grave complications may cause a fatal termination, as, for instance, spasm of the glottis, coma, and cerebral hemorrage may induce death. A tendency to eclampsia remains for years.

Prognosis. — Prognosis is dependent upon the cause, and therefore usually not unfavorable except in rhachitic children, when laryngismus complicates the attack; also in very severe convulsions which repeat frequently, the prognosis becomes more doubtful, on account of the possible cerebral or meningeal congestion and hemorrhages.

The diagnosis will be guided by the observation of one or more attacks, by which, however, some organic cerebral affection cannot always be positively excluded. Such an affection may be thought of if the spasms remain semilateral. After prolonged watching of the case, the absence of further brain symptoms will diagnose eclampsia; but if the exciting cause can be found from the beginning, diagnosis becomes less difficult. In convulsions, during the prodromal stage of acute infectious diseases with high fever, meningitis may be suspected. Here the further course of the affection will clear up the doubt within a day or two. It is often difficult to determine, after repeated severe attacks, whether epilepsy exists or not. The latter will become probable if sustained by a family history and if no direct cause for the attacks can be found.

Treatment.—Regarding the physician's bearing in the treatment of convulsions, Dr. Tooker's advice in his text-book is good. He says: "It is not often that the physician arrives in time to find the patient in the fit. When he does, the most important thing is to preserve a calm, well-poised demeanor, and without unseemly haste, direct the various persons about" (and send most of them out of the room—M. D.), and in this way a quiet atmosphere is secured about the patient, on whom the physician himself keeps a watchful eye. (*l. c.*, p. 655.) With the rest of Dr. Tooker's recommendations, I am sorry not to be able to agree. I have never seen any good derived from baths or packs, and the shock connected with them often tends to aggravate the convulsions. When it can be ascertained, beyond all possible doubt, that the child has partaken of a large amount of unsuitable food, the quicker this is out of the body the better, and a sufficient dose of castor oil may be all that is required. For the same urgent reason an enema of warm water may be given. A free evacuation of the intestines will always facilitate abdominal circulation, and thus be indirectly beneficial; but emetics, gum-lancing, etc., are procedures which no conscientious physician will resort to at the present day.

No matter how serious the attack, undress the child entirely, and place it lightly covered upon a large bed. Inquire thoroughly into the history of the case, observe closely the character of the convulsions and the attitude of the child. Then select your remedy in accordance therewith. The best method of getting

the drug to affect the patient during a convulsion is by placing a few globules of the potentized remedy inside the lips or under the tongue, or by holding the open vial closely to the child's nostrils for inhalation. *Chamomilla*, *cicuta*, *cina*, *belladonna*, *calcarea carbonica*, *coffea*, *cuprum*, *hyoscyamus*, *ignatia*, *ipecacuanha*, *kali bromicum*, *kreosotum*, *magnesia phosphorica*, *silicea*, *stramonium*, and *zincum* have their well-known characteristic indications, and will act promptly in their respective sphere. *Monotropa uniflora* has been recommended by all who have employed this drug empirically in convulsions, but as yet pathogentic indications are wanting.

EPILEPSY.—This affection, though not strictly a disease of childhood, is not uncommon during the early period of life, as has been intimated in the remarks on diagnosis of eclampsia. By the term "epilepsy" we understand a chronic functional disease of the brain, often accompanied by degenerative processes of that organ, which is characterized by recurrent attacks of impairment or loss of consciousness, which may or may not be attended with convulsions. It generally begins before the age of twenty, mostly at commencing puberty; but cases occurring in children under four years of age are more numerous than has been formerly suspected. Epileptics frequently show some psychical disturbance even at times when free from the attack.

The etiology is still obscure, though experimental researches locate the origin of epileptic convulsions in the frontal and lateral regions of the cortex of the brain. Therefore various pathological processes of

this organ itself and its membranes, or of the cranium, may cause functional disturbances in these motor regions, and thus induce symptomatic or focal epilepsy. Such causes consist in tumors, gummata, tubercles, exostoses, abscesses, traumatic effects, etc. Also reflex irritations originating in the nose, ear, larynx, prepuce, etc., in fact, at any of the orifices of the body, may develop epilepsy. A hereditary predisposition undoubtedly exists in many cases; in others, it may be acquired. Injury during birth, premature mental exertion, the use of alcohol in children, masturbation, and mental impressions, as intense fright, fear, or joy, have been reported as exciting causes.

Symptomatology.—The first attack may occur suddenly in the form of intense convulsions, even at an early age; but the disease can also develop gradually. In the latter instance there will be an occasional momentary loss of consciousness, the child staggers and falls, or it need not even go so far; he will simply drop things from his hands with an expression of total absent-mindedness and a vacant look in his face. Afterwards he will not know what has happened, and in such cases punishment for carelessness is highly unjust. In many of these conditions the child will be shy in his disposition, and the observer finds slight twitching in the face accompanying the staring look, during such an attack of unconsciousness (petit mal). The confirmed paroxysms (grand mal) are much more intense. Generally an irritable state, peevishness with vertigo or anxiety, tinnitus, nausea, a sense of strangulation, or hallucinations, etc. (the aura), precede a typical attack, which begins within a few seconds.

With a loud cry the child sinks, falls, or is thrown down forcibly, his face becoming very pale. After a momentary quiet the head is drawn back, the eyes stare and are turned upwards or sideways with enlarged pupils. The whole body presents a tonic rigidity. Then the pale face becomes congested, dark red, even cyanotic, severe general clonic spasms follow, during which the tongue is often caught between the teeth and a bloody froth oozes from the mouth. Flatus and urine may escape involuntarily, stool less frequently; respiration is irregular or accelerated and has a peculiar loud snoring sound. The pulse, which is weak in the beginning, gradually becomes fuller and quicker. After a few minutes, the convulsions lessen and cease with a few single jerks of the extremities, or with a general tremor running through the body. The face again appears pale and with perspiration breaking out all over the body, the breathing gradually becomes regular. A heavy sleep follows, or the patient comes out of the attack like awakening from a fearful dream, and complains of headache. Such attacks will repeat after long intervals at first, but later on they become more frequent. In some cases they occur only at night. They vary in intensity and may be limited to single groups of muscles. At the beginning of epilepsy the condition of the body and mind remain apparently normal during the intervals; but soon, especially after severe attacks, psychical and nervous disturbances appear. The children show a timid, shy disposition, which often passes into loss of memory, melancholia, idiocy, or mania; some epileptics, however, continue in good

mental condition throughout. Frequently attacks are followed by more or less rise of temperature, albuminuria, polyuria, glycosuria, and retinal hemorrhages. Epilepsy is always chronic, lasting for many years, often through a long life. Puberty may increase or decrease the malady, and a marked cessation of the attacks has been observed during and after intercurring fevers.

Prognosis. — Hereditary epilepsy gives little chance for a cure; while the acquired form, depending upon reflexes or traumatic causes, is more promising. According to Lloyd (Starr's text-book) "brain surgery has received focal cases due to gross lesions, but even in these cases relapses have occurred."

The diagnosis depends upon the characteristic repetition of the attacks, combined with mental changes in the child, and will be greatly aided by the admission of heredity. Hysteria has to be considered as well as feigned epilepsy, which is hardly ever practiced by children, and can be disclosed by a careful analysis of the attack. Valuable points in diagnosis are the cessation of reflexes of the cornea and the pupils, also the complete loss of consciousness, which is rare in other forms of convulsions, though in isolated instances, with localized epileptic spasms, consciousness may not be entirely lost.

Treatment.—During an epileptic attack the patient should be placed in a horizontal position, on a mattress or some other soft material, to prevent serious injury during the often violent convulsive movements. All methods of treatment at that time have proved of little avail, and it is best not to interfere,

but simply to watch and protect the patient. Inhalations of *amyl nitrite*, *ether*, or *chloroform* have sometimes had beneficial results, but even those who advocate this practice, warn of its dangers, especially with reference to *chloroform*. In my experience any suppression of the individual attack predisposes to more frequent repetitions. After the attack the patient should be allowed to sleep quietly until spontaneous awaking occurs.

The epileptic seizure, being but a group of symptoms of a deeply rooted affection, should only form a part of the study in our cases. Wherever the cause is known it should be removed if possible; and the whole mode of life of the patient should be so modified as to insure mental rest. All exciting, emotional influences, even those of a pleasurable nature, must be avoided. Gentle educational methods should be employed, and moderate exercise, both mentally and bodily, is advisable, while all undue exertion in either direction is objectionable. The diet should be of simple but nourishing character and to a great extent, but not absolutely, vegetable.

It will take years of observation to be able to judge of the ultimate result of a cure of epilepsy. We have a chance for eventual success, as long as the intervals between the attacks can be prolonged and the general condition of the patient improves, especially in his mental sphere. The prescription should therefore mainly rest upon constitutional indications, and nothing in the history of the patient since birth, nor in his family history, should escape our notice. The peculiarities of the attacks themselves and the time

of their occurrence are of great importance, and should be investigated in every detail. A single remedy will rarely suffice to cure a case of confirmed epilepsy, but a course of remedies, carefully selected, following each other in symptomatic relationship, and repeated at long intervals, have often brought about very satisfactory results. The extended list of remedies found in various homœopathic text-books give little encouragement, especially as they are most all recorded with reference to their influence on the convulsive nature of the disease. The more we leave this in the background when taking the case, and the more stress we lay on the individual characteristics of the patient, the more will we find that Hahnemann's *antipsorics* and a few other remedies will cure the epileptic habit more frequently and certainly than many of those rare drugs, the provings of which are incomplete and unreliable; and the empirical administration of which tends to discourage patient and physician. Therefore *argentum nitricum*, *calcarea carbonica*, *calcarea phosphorica*, *causticum*, *ignatia*, *kali carbonicum*, *natrum muriaticum*, *natrum sulphuricum*, *nitric acid*, *nux vomica*, *opium*, *platinum*, *plumbum*, *psorinum*, *silicea*, *staphysagria*, *syphilinum*, *thuja*, *zincum*, will be most frequently employed; but cases will arise which point strongly to another group in which the convulsive nature is more prominent: *Absinthe*, *agaricin*, *artemisia*, *asterias rubens*, *belladonna*, *bufo*, *cannabis indica*, *cicuta*, *crotalus*, *cuprum*, *hydrocyanic acid*, *hyoscyamus*, *lachesis*, *caja tripudians*, *œnanthe*, *stannum*, *tarantula hispana*, *zizia*.

The *bromides*, powerful palliatives, but not curatives, are looked upon with growing suspicion even by writers of the old school. Horatio C. Wood says with reference to this: "Although Albertoni has shown, by direct experiment, that they diminish decidedly the irritability of the cerebral cortex in the motor zone, they are palliative rather than curative, and act only while present in the cortex. They do not remove the tendency to epileptic attacks, but antagonize the action of such tendency, and must, therefore, in most cases be administered continuously for many years after the occurrence of the last fit." (Pepper's text-book, vol. I, p. 625.)

Donkin, in his Diseases of Childhood, remarks with reference to *bromides*, that their continued employment during childhood is not to be recommended, on account of the eminently depressing effects upon the nervous system and the mind, setting up a permanent listless habit, also producing anorexia and dyspepsia difficult to overcome.

To facilitate the selection of the remedy in cases of brain disease, I have arranged the following "Repertory of Characteristics," which, when used in conjunction with the Materia Medica, will lead to the proper comparison of competing drugs and thus to the ultimate selection of the remedy in the case:

REPERTORY OF CHARACTERISTICS.

Mind.

Seems afraid of something; starts as in affright: *Opium.*
Child whimpers; ready to cry at any little annoyance; sheds tears copiously: *Pulsatilla.*
Mild and tearful: *Alumina, ignatia, pulsatilla.*
Sudden change of disposition: *Bryonia.*
Almost constant moaning: *BELLADONNA, helleborus.*
Angry, reluctant: *Chamomilla, nux vomica;* and hot all over body: *Zincum.*
Angry, worse when kindly spoken to; striking about, unwilling to have anybody near them: *Helleborus.*
Nervous temperament: *Cocculus, coffea, secale, staphysagria.*
Bites those who hold her: *Stramonium.*
Irritable, peevish: *Chamomilla, cina, nux vomica.*
Delirium with jerking of the limbs: *HYOSCYAMUS.*
Delirium, muttering and indistinct speech: *Hyoscyamus.*
Furious delirium and violent pains: *BELLADONNA.*
Furious delirium with intervals of prostration: *Stramonium.*
Delirium with wild fancies: *CIMICIFUGA.*
Mild delirium; severe shooting and tearing pains: *BRYONIA.*
Merry delirium; *Stramonium.*
Great loquacity; pronounces incoherent words now and then: *Stramonium.*
Peevish and fretful: *CALCAREA PHOSPHORICA.*
Peevish and cross: *CINA.*
Desire to escape from bed and room; loud screams, frequent and deafening: *Stramonium.*
Sharp shrill screams when asleep or awake: *APIS.*
Frequent spells of screaming without apparent cause: *CALCAREA CARBONICA.*
Often screaming and grasping with the hands: *CALCAREA PHOSPHORICA.*
Picking at the bedclothes: *CINA, hyoscyamus.*
Apathetic mood: *GELSEMIUM, calcarea phosphorica.*

MIND—Concluded.

Listless and apathetic, hardly answers, sinking back in apathy: *PHOSPHORIC ACID.*

Complete apathy: *Helleborus.*

Stupor: *Apocynum cannabinum, helleborus, hyoscyamus, stramonium.*

Head.

Sweats heavily about the head: *CALCAREA CARBONICA.*

Profuse sweat about the head at night: *SILICEA.*

Cold head sweating: *Calcarea carbonica.*

Profuse sweat on the head of a musk-like odor: *APIS, sulphur.*

Dry hot head: *Sulphur.*

Great heat of the head and whole body: *BELLADONNA.*

Fontanelles wide open: *CALCAREA CARBONICA, CALCAREA PHOSPHORICA.*

Sutures opened, forehead projecting: *APOCYNUM CANNABINUM.*

Burning skin, with sweat on head and forehead: *Stramonium.*

Constant relapsing of the head on raising the trunk: *HELLEBORUS, ÆTHUSA.*

Head sinks backward, as if too heavy: *SULPHUR.*

Child often moves its trembling hand to the head: *HELLEBORUS.*

Puts the hands to the head, which he strikes now and then: *Stramonium.*

Strikes head with fists, as though for temporary relief: *ARSENIC.*

Bores the head backward into pillow: *BELLADONNA, cicuta.*

Eyes.

Glittering of eyes: *Stramonium.*

Sparkling eyes, with red face: *BELLADONNA.*

Rolling and squinting of eyes: *APIS, belladonna, helleborus.*

Eyes—Concluded.

Strabismus: *HELLEBORUS.*

Strabismus, right convergent, left divergent: *Stramonium.*

Strabismus, as it were, from pressure: *CALCAREA PHOSPHORICA.*

Rolling of eye-balls without winking: *Apis.*

Eyes roll about in their socket: *BRYONIA.*

Eyes at times closed, at others wide open: *BRYONIA.*

Eyes half opened, with sopor: *Opium.*

Eyes half opened, with pupils turned sideways or upwards, and convulsive movement of the lips: *Helleborus.*

Dilated pupils: *APIS, BELLADONNA, HELLEBORUS, SULPHUR.*

Contracted pupils: *Stramonium, opium.*

Alternate contraction and dilation of pupils: *Carbolic acid.*

Power of vision entirely gone, with dilated pupils: *Digitalis.*

No evidence of seeing when light was thrust towards eyes: *Apis, OPIUM.*

Wild, staring look: *HYOSCYAMUS, stramonium.*

Sight of one eye totally lost, the other slightly sensible: *APOCYNUM.*

Eye-balls seem distended and protruding: *CALCAREA PHOSPHORICA.*

Eyes sunk: *Arsenic, bufo, stannum, staphysagria.*

Swelling above the upper eye-lids: *KALI CARBONICUM.*

Convulsive motions of eyes and lids: *Ignatia.*

Eyes closed, on lifting the lids eyes stare upwards: *Cicuta.*

Ears.

Suppressed otorrhœa: *Pulsatilla, sulphur.*

Ears cold: *Calcarea phosphorica.*

Loss of hearing: *Apis, phosphorus.*

Hearing inordinately acute: *Opium.*

Nose.

Nostrils dirty and dry: *Helleborus, zincum.*

Frequent rubbing of the nose: *Helleborus.*

Nose—Concluded.

Constant picking the nose: *Cina.*
Point of nose cold: *Calcarea phosphorica.*

Face.

Red face: *Hyoscyamus;* crimson: *Bryonia.*
Redness or heat of the face, with sparkling eyes: *Belladonna.*
Face red, almost brown-red: *Bryonia.*
Dark red hue on face: *Gelsemium, belladonna.*
Flushes of heat: *Sulphur.*
Sudden change of color in the face: *Bryonia.*
Frequent change of color in the face: *Sulphur.*
Face bloated and highly congested: *Belladonna.*
Face pale and waxy: *Apis, arsenic.*
Face pale and oldish looking: *Artemisia vulgaris.*
Hippocratic countenunce: *Carbo vegetabilis.*
Face pale, sallow: *Calcarea phosphorica.*
Cold sweat on the face: *Calcarea phosphorica.*
Forehead covered with a cold, clammy sweat: *Veratrum album.*
Cold sweat on face, hands, and feet: *Veratrum viride.*
Passes hand over the face as though trying to brush something off: *Nux vomica.*
Rubs face and eyes indignantly: *Squilla.*
Constant motion of the jaws, as if chewing: *BRYONIA, helleborus.*
Convulsive motion of the lips: *Ignatia.*
Dropping of the lower jaw: *Helleborus, opium.*
Lock-jaw: *Cuprum, stramonium.*
Swollen under-lip: *Calcarea phosphorica.*
Looks stupid: *Gelsemium.*
Looks frightened, with sardonic smile: *Stramonium.*

Teeth.

Grinding of the teeth: *Apis, cuprum, stramonium.*
Child grasps at its gums continually, as though they were painful: *Silicea.*
Scorbutic gums: *Mercurius.*

Tongue.

Dry, yellow, or brown coated tongue: *Bryonia.*

Tongue quite clean, but vomiting frequently: *Cina.*

Tongue dry and red; previously black: *Helleborus.*

Child regularly protrudes and retracts the tongue in fever: *Sulphur.*

Tongue is darted back and forth with great rapidity, like a snake's: *Cuprum aceticum.*

Eating and Drinking.

Dysphagia: *Stramonium.*

When water was put into his mouth, no effort of swallowing was made: *Apis.*

Hasty, impetuous drinking and swallowing: *Bryonia, helleborus, stramonium.*

Drinking and swallowing water eagerly in sopor: *Artemisia vulgaris.*

Desires cold water often, drinks but little at a time: *ARSENIC.*

Very thirsty, desires only cold water or ice: *Veratrum album.*

No thirst: *Apis, pulsatilla.*

Children refuse mother's breast: *Calcarea phosphorica.*

Hiccough: *Cuprum, hyoscyamus, stramonium.*

Constant nausea without relief: *Ipecacuanha.*

Vomiting of mucus: *Cuprum.*

As soon after drinking as the water gets warm in the stomach, it is vomited: *PHOSPHORUS.*

Epigastrium, great pains in the: *Æsculus hippocastanum, cuprum.*

Urine.

Scanty: *BRYONIA, PULSATILLA, APIS, HELLEBORUS, zincum.*

Suppressed: *Apis, apocynum cannabinum, stramonium.*

Large quantities of colorless urine, especially during the night: *PHOSPHORIC ACID, squilla.*

Profuse or scanty: *Apis, stramonium.*

Urine has putrid odor: *Sepia.*

Red sediment on diaper: *Lycopodium, sarsaparilla.*

Clay-colored sediment: *Sepia.*

Respiration.

Quick, moaning: *Bryonia.*
Labored, occasionally with deep sighs: *Helleborus.*
Dyspnœa: *Laurocerasus.*
Sighing and sobbing frequently: *Ignatia, plumbum.*
Very heavy, like death rattle: *Pulsatilla, tartarus emeticus.*
Breath cold: *Carbo vegetabilis.*

Pulse.

Irregular, slow: *Apis, helleborus, pulsatilla, digitalis.*
Very rapid: *Sulphur, veratrum viride.*
Very feeble: *Æthusa, veratrum album.*
Throbbing of the carotids: *Belladonna, hyoscyamus.*

Limbs.

Coldness of hands and a bluish appearance of the fingers: *Cuprum.*
Coldness of limbs, especially the knees: *CARBO VEGETABILIS.*
Cold and clammy sweat upon the thighs and legs: *MERCURIUS.*
Coldness of feet and legs: *Phosphorus.*
Feet in constant motion: *Zincum.*
Involuntary motions of the extremities: *APOCYNUM.*
Involuntary throwing or whirling about of one arm and one leg: *Helleborus.*
Jerking of the limbs: *Hyoscyamus, CICUTA.*
Trembling of the limbs: *Apis.*
Stiffening of the limbs: *Carbolic acid.*
Uncertain, tottering gait: *Bryonia, CALCAREA PHOSPHORICA.*
Single parts convulsed: *IGNATIA.*
Left side had been entirely motionless for two days, moved right arm and leg occasionally: *Apis.*
Starting and jumping in a drowsy state: *BELLADONNA.*
Starting frequently with screams and howling: *Helleborus.*
Inability to raise oneself alone: *HELLEBORUS, stramonium.*

LIMBS—Concluded.

Great prostration: *ARSENIC, CARBO VEGETABILIS, VERATRUM ALBUM.*

Nervous and restless, *ACONITE;* with convulsions, *APIS.*

Convulsions, with great restlessness between the attacks: *ARGENTUM NITRICUM.*

Spasms commence mostly in fingers and toes: *Cuprum.*

Body bent far backward during the convulsions: *Veratram viride.*

Occasionally sinking spells, regularly about the middle of the day: *SULPHUR.*

Sleep.

Snoring: *Opium.*

Screams during sleep: *APIS, helleborus.*

Comatose: *APOCYNUM, ARTEMISIA VULGARIS, Cuprum.*

Semi-comatose, drowsy state: *BELLADONNA, æthusa, GELSEMIUM, opium.*

Soporous state, with half-open eyes and red face: *OPIUM.*

Dull and drowsy after waking, as if intoxicated: *Opium.*

Dull and inclined to sleep all the time; no sooner roused than wants to go to sleep again; sleep normal: *Phosphorus.*

Sleeps nearly all the time, but only in short naps: *Sulphur.*

Particularly wakeful and restless after 3 A. M.: *NUX VOMICA.*

On awakening, evidence of fear: *Stramonium, zincum.*

Attacks Begin—

Arm, in: *Belladonna.*

Abdomen, in: *Calcarea carbonica.*

Epigastrium, in: *Nux vomica, glonoinum.*

Fingers and toes, in the: *Æthusa cynapium, cuprum, hydrocyanic acid.*

Buttocks, in: *Sepia.*

Face, in: *Belladonna, chamomilla, dulcamara, hyoscyamus, ignatia, lycopodium, mercurius, secale, stramonium.*

Heel, right in the—going to vertex: *Stramonium.*

Head, in—going downwards: *Cicuta.*

ATTACKS BEGIN—Concluded.

Ani, sphincter: *Colchicum.*

Sleep, during: *Bufo, causticum, chamomilla, lachesis, opium.*

Causes.

Wet-nurse—vexation of: *Nux vomica, opium.*

Wet-nurse—grief of: *Ignatia.*

Wet-nurse—fright of: *Aconite, ignatia.*

Excitement—great—of child—with vexation: *Chamomilla, kali bromicum, nux vomica.*

Excitement, pleasurable: *Cocculus, coffea.*

Discharges suppressed: *Asafœtida, bryonia, campohora, sulphur.*

Eruption suppressed: *Agaricus, antimonium tartaricum, bryonia, calcarea carbonica, causticum, camphora, cuprum aceticum, ipecacuanha, stramonium, sulphur, zincum.*

Touch of larynx, the least: *Cantharis.*

Touch of eyelids: *Coccus cacti.*

Touch of the feet: *Nux vomica.*

Punishment: *Ignatia.*

Pressure on spine: *Terebinthina.*

Laughing excessively: *Coffea, ignatia,*

Drinking, hasty: *Belladonna, hepar, hyoscyamus, ignatia.*

Vaccination, after: *Silicea.*

Whooping-cough: *Arsenic, belladonna, chamomilla, cantharis, cuprum, drosera, hydrophobinum.*

Fright: *Aconite, gelsemium, hyoscyamus, ignatia, kali bromicum, opium, stramonium.*

Sun, heat of: *Belladonna, glonoinum, nux vomica, sulphur.*

Indigestion: *Ipecacuanha, nux vomica, pulsatilla.*

Worms: *Asafœtida, calcarea carbonica, cicuta, cina, hyoscyamus, ignatia, mercurius, sabadilla, stannum, sulphur.*

Dentition: *Belladonna, calcarea carbonica, chamomilla, cina, cuprum, dolichos, ignatia, podophyllin, stannum, stramonium.*

Time of Appearance and Aggravation.

Daybreak, at: *Platina.*
Morning, in the: *Artemisia vulgaris, causticum, crotalus horridus, secale, sulphur, tabacum.*
9 A. M.: *Lyssin, natrum muriaticum.*
Noon: *Aconite.*
4—8 P. M.: *Lycopodium.*
8 P. M.: *Arsenic.*
11 P. M.: *Opium.*
Night, at: *Arsenic, artemisia, calcarea, china, cuprum, digitalis, hyoscyamus, kali carbonicum, lycopodium, mercurius, nux vomica, plumbum, secale, silicea, sulphur.*
Midnight: *China, crocus.*
2 A. M., until: *Kali bromicum.*
3 A. M.: *Agaricus, kali carbonicum.*
New moon: *Bufo, causticum, cuprum, kali bromicum, silicea.*
Full moon: *Calcarea carbonica, kali muriaticum.*
Supper, after: *Zincum.*
Exercise, during: *Bryonia.*
Eating, while: *Hyoscyamus, ignatia, nitric acid.*
Flowing water, hearing: *Hydrophobinum.*
Thunder storm: *Agaricus, natrum carbonicum, rhododendron, silicea.*
Noise: *Coffea, nux vomica, stramonium, strychnine.*
Light strong: *Stramonium.*
Back, lying on: *Calcarea phosphorica.*
Swallowing, while: *Nux vomica, hydrophobinum, stramonium.*
Stool, during: *Arsenic, chamomilla, magnesia phosphorica, mercurius, pulsatilla, sulphur, veratrum album.*
Midnight, after: *Arsenic.*
Morning and evening: *China.*

After the Attack.

Legs and knees bent and spread: *Platinum.*
Consciousness returns slowly, with continuing paralysis: *Plumbum.*

After the Attack—Concluded.

Chest, oppression of: *Ignatia.*
Delirium: *Kali chloricum.*
Abdomen, great sensitiveness of: *Bryonia.*
Prostration marked: *Arsenic, artemisia, absinthe.*
Child cries and twists until next attack: *Cuprum.*
Breath, gasping for: *Laurocerasus.*
Soporous sleep: *Absinthe, artemisia, belladonna, œnanthe, opium.*
Urine, profuse, clear: *Cuprum.*

CHAPTER V.

DISEASES OF THE SPINAL CORD.

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General Considerations.—Diseases of the spinal cord occur infrequently in children, and unfortunately they are seldom diagnosed by the average general practitioner until the ravages of the malady have become cognizable even to the laity. The most frequent form included in this category is myelitis. By this is meant an inflammation of the spinal cord. Charity-like, this term is used to cover much; it indicates a condition possessing many phases, whose nomenclature is oftentimes quite arbitrary,—the latter depending upon the mode of attack, the part of the cord involved, the predisposing influences, the exciting causes, the course of the disease and the duration of the malady.

Thus, it will be seen that we may have to consider the acute, subacute, or chronic manifestations; the transverse, central, annular, diffuse, focal, or disseminated varieties; the interstitial or parenchymatous forms; the syphilitic, infectious, secondary, compressive, or traumatic sources. From this it may be in-

ferred, that the symptomatology of myelitis is necessarily very comprehensive in its scope and character.

Poliomyelitis Anterior. — First and foremost among these conditions is poliomyelitis anterior. This occurs most frequently in the first three years of life. It may be primary, or it may be secondary to diseases of a toxic character. Traumatism may occasionally induce it. It occurs more frequently during the summer months. The development of this phase of spinal disease is sudden and acute. Its course soon becomes more or less chronic. A prodromal stage of several days' duration is sometimes seen, which is characterized by fever and restlessness, though it may be ushered in suddenly by convulsions. After the initial stage, the following symptoms are to be expected: Unconsciousness, often lasting many days; vomiting; intestinal disturbance; bladder complications; great nervous irritability, which may suggest the prodromata of a number of diseases; temperature ranges from 100 degrees to 102 degrees F., sometimes higher.

The prodromal symptoms may be absent, and a paralysis will suddenly affect the extremities; this soon becomes monoplegic. Pain in the affected limb often occurs at first. The motor sphere is involved, while that of sensation remains intact. All forms of paralysis may occur, — paraplegia, diplegia, cross-paralysis, paralysis of both arms, the dorsal muscles, and those of the abdomen, and even hemiplegia; groups of muscles are attacked,—the extensors, abductors, or supinators.

The prodromal symptoms usually pass away very

quickly, the usual functions are carried on, the general growth continues, and mental activity is unimpaired; the tendon reflexes disappear from the affected limbs; at its height, the paralysis remains stationary from two to four weeks, at which time a gradual improvement begins; other groups are then involved in the same way, with similar results. These various groups may recover entirely, or remain disorganized, with contractures and deformities. A paralysis affecting the gastrocnemii and posterior tibial muscles results in an anterior flexion, and the child will walk upon its heel; if the anterior muscles are principally affected, *talipes equinus* results. The deformity will always depend upon the group of muscles involved.

Dislocation of the joints may occur; the tissues become flaccid; too great mobility often results; as may be seen at times in the hip, knee, ankle, shoulder, or wrist.

Muscular atrophy is marked, rapid, and extreme; the bones are arrested in growth; the surface temperature of the affected part is lowered; its circulation is sluggish; it is cold, relaxed, and lifeless; the implicated muscles respond slowly, or not at all to the faradic current.

For clinical convenience, the disease may be divided into four stages; invasion, lasting from a few hours to several days, characterized by local tenderness, with rapidly developing and increasing paralysis; a stationary stage, of several weeks' duration; a period of improvement, lasting several months; permanent disability, for the remainder of life.

Clinical suggestions will be found at the close of this section, in conjunction with other diseases of the cord. This method has been adopted, because of the wide range of our remedies, as well as the peculiar relations which so often co-exist between the different arbitrary divisions of affections of the spinal cord.

Acute Myelitis, or acute softening of the cord, usually develops gradually, unless from traumatic causes. This stage may be from a few hours to several months, according to the causative conditions which are in operation. In cases developing more slowly there are prodromata; temporary weakness; tingling sensations; radiating pains; numbness and weakness in the legs; the lower extremities become heavy and unmanageable; paralysis soon follows.

During the first week the temperature rises, but it rarely reaches 104 degrees F.; delirium and convulsions may occur; the reflexes are early and permanently lost. The pain will vary with the seat of the inflammation; if the posterior roots and meninges are involved, pain in the back and limbs is very prominent and excruciating. A girdle sensation and zone of hyperæsthesia about the abdomen or chest may serve to indicate the upper limit of the disease. The symptomatology will vary according to the location and area of the lesion.

Below the affected part, and depending upon the intensity of the attack, there are all shades of sensations, from slight numbness to complete anæsthesia.

In some cases there is an aching sensation in the legs, while cramps and flexing of the lower limbs is the rule. The paralyzed portions have at first an in-

creased temperature, but they soon become subnormal. Sluggish circulation and emaciation follow, and œdema shows itself where the limbs are in a pendant position. Bed-sores quickly develop, and are quite intractable.

Clinically considered, a given case, suffering from this malady, may be arrested at any point, from which a recovery more or less complete may follow. It may progress from bad to worse; the formation of bed-sores, cystitis, exhaustion, death.

Chronic Myelitis is the result of an acute attack, which it usually follows. Its diagnosis depends upon the following significant symptoms: The long duration of the malady with the history of an acute stage; bladder complications; intestinal involvement; paraplegic disturbance of sensation; motor deficiency; continued wasting; absence of pupillary symptoms; lightning pains; inco-ordination; rigidity of the limbs; increased reflexes; marked contractures; old bed-sores.

Landry's Paralysis, or the acute ascending form of paralysis, is occasionally diagnosed in children. It follows infectious diseases, exposure to wet and cold, traumatism, and syphilis. It presents the following group of symptoms: A feeling of weakness begins in the feet and legs and creeps slowly upwards and becomes more pronounced in the lower levels as the disease ascends. In the course of a few days the lower extremities are completely paralyzed and the weakness has involved the trunk and the upper extremities; the breathing is impaired; deglutition is difficult; every voluntary muscle below the face may

be involved and rendered completely useless; the sphincters are *not* relaxed; tendon and superficial reflexes are usually present; sensation is not perverted. Recovery from this disease it slow and in the reverse order of its development.

Syringomyelia has been defined as a disease of the spinal cord which is characterized by a growth of gliomatous tissue in the gray matter; this breaks down and forms a cavity. Traumatism, infectious diseases, and exposure to cold are among the exciting causes. The symptoms depend upon the point affected, and they may be defined thus: Analgesia; thermo-anæsthesia; the type is hemiplegic, and at times monoplegic; progressive muscular atrophy; loss of power; tremor in the hands and fingers; trophic lesions of the skin produce hypertrophies, callosities, ulcerations, eruptions, maculæ, and glossy spots; the nails become thickened, ridged, and fall off; whitlows; abscesses; fragilities of the bony structures; deviation of the spine; scoliosis; kyphosis; lordosis; the extremities are cold, with alternate burning sensations; persistence of lines or depressions drawn upon the skin; the knee-jerk is exaggerated; ankle-clonus is present; the gait is feeble; ataxia may be present; also, swaying with closed eyes. The course is slow, and the termination is unfavorable.

Hereditary Ataxia usually begins in the legs, accompanied by nystagmus, impaired speech, and follows a slow progressive course. It is characterized by the following conditions: Unsteadiness upon the feet; awkwardness and clumsiness in walking; the

knee-jerk disappears early; there is not much pain; muscular power is reduced; the patient becomes helpless; the head rolls around upon the shoulders; there are tremors and choreic movements; the usual facial expression is lost; the jaw drops; the eyelids become heavy and droop; there is an appearance of apathy or even imbecility, and exhaustion.

TREATMENT.

General.—The clause referring to the treatment may be prefaced with the remark that medicines do not promise much benefit in this class of cases unless they are administered in accordance with the principles of homœopathy. A primary desideratum in these conditions is the securing of complete rest,—rest in body and mind. In the great majority of such cases the patient should be put to bed at once, placed upon one side, or upon the chest or abdomen, and, as much as possible, prevented from lying upon the back. The food and drinks must be carefully adapted to each individual case. The excretions should be closely watched and judiciously aided if necessary. Strict cleanliness must be observed. In many cases, delicate massage and light hand-rubbing will accomplish good results. Study the causes of the trouble and remove them if possible. It should ever be borne in mind that whatever tends to produce a healthy tone of the individual patient and to increase the hopefulness of his surroundings will assist more or less directly in facilitating the cure.

Medicinal.—In the earlier stages the polychrests may be indicated; if so, and they are properly admin-

istered, the trouble may be much modified, thus rendering mild and tractable what would otherwise be dangerously obstinate. The following remedies may be indicated in the early course of this class of cases: *Aconite*, *belladonna*, *gelseminum*, *nux vomica*, *veratrum viride*, *ignatia*, *arsenicum*, etc., etc. The symptoms should be carefully collated, the case individualized, and the remedy selected independently of the nomenclature as applied to the malady. Use any medicine whose totality of symptoms is analogous to those found to exist in any prior case. Use the single remedy,—do not alternate. Do not administer too much medicine—nor too little. In your choice of the similimum, be as "wise as serpents and as harmless as doves."

Agaricus deserves much consideration; its pains are bruised, sprained, stitching and tensive sensations; its spinal symptoms are, stitching, deep-seated, burning, and aching pains, aggravated by stooping; soreness to the touch; flying pains; weakness and stiffness.

Aluminium metallicum—The soles of the feet feel as if they were too soft and swollen; the heels are numb; the limbs are heavy and difficult to lift; the gait is slow and staggering; inability to walk in the dark or with the eyes closed; bruised pain in the back; burning sensation in the lower vertebræ.

Argentum nitricum—For a staggering gait; vertigo; trembling; tremulous sensations; general debility; chorea-like movements of the limbs; transient blindness; sunken, pale countenance; sleeplessness.

Calcarea carbonica—For pains in the shoulders; loss

of muscular power; the dorsal muscles become atrophied; the lower limbs are wasted; there is quivering of the extremities; dimness of sight; cramps in the feet and legs; anorexia; constipation; great nervousness.

Cicuta—Vertigo and reeling; frequent jerks in the upper portion of the body; spasms and cramps in the nape of the neck and spasmodic throwing of the head backward; hiccough; unconsciousness; spasms with great distortion of the limbs.

Cocculus—The legs become unwieldy, they are lifted with great difficulty and dragged along; the hands lose their sensibility; nervous exhaustion; profound weakness of the extremities; aching in the limbs; the extremities fall asleep; mental depression.

Colchicum—Extreme prostration; tendency to collapse; shifting, shooting pains; the suffering is of a paralytic character; cramps; anxiety and strangury.

Cuprum aceticum—Numbness and lameness in the left hand; the left foot drags when walking; a numb lameness involves the left sole and extends gradually to the knee; standing and walking becomes difficult; the left foot and leg are atrophied; sense of coldness in the left foot; dull pain from the hip to the knee.

Eupatorium perfoliatum—Aching in the bones and soreness of the flesh; feeling as if the joints were broken or dislocated.

Hypericum—After an injury; the slightest motion of the arms or neck is extremely painful; the cervical vertebræ are very sensitive to the touch; headache; desire for warm drinks.

Nux vomica—Partial paralysis of the lower limbs

from over exertion and exposure; the limbs drag and cannot be lifted from the ground when walking; sensation impaired in the legs; the limbs are cold and bluish; constipation; anorexia; and occipital headache.

Plumbum metallicum—For tremor of the right arm during voluntary motion; the arms become tremulous on attempting to use them, with weakness and numbness; the tongue trembles when being protruded or when trying to talk; the speech is hesitating and slow; diplopia; dimness of vision; optic neuritis.

Physostigma—Tremors, especially from psychic or physical disturbances in the young; staggering gait; constriction about the head or waist; a feeling of weakness, as though paralyzed, passes downward from the occiput to the lower limbs, which feel as though they were asleep.

Phosphorus—After exposure to cold and moisture; in connection with an inflammatory process of the vertebræ; burning pain in the spine; tenderness at the roots of the spinal nerves; dyspnœa; cough; feeble vision; vertigo; constipation, with narrow, dry stools; anæsthesia of the extremities.

Picric acid—Spasms of a tonic and clonic character; the legs are kept widely apart when the patient is standing; he looks steadily at objects, as if unable to make them out; his limbs are unable to support the body.

Rhododendron—Bruised feeling; symptoms are greatly aggravated by barometric changes; sensitiveness to cold winds; always worse before a storm; and trembling and tottering.

Rhus toxicodendron—After infectious diseases, or from exposure; from cold and dampness; high fever; great restlessness; tingling sensation in the limbs; and paralysis of the extremities.

Secale cornutum—May be of benefit where there are violent pains in the back, especially in the sacral region; anæsthesia of the limbs; paralysis of the extremities with convulsive shocks and jerks; painful contraction of the flexor muscles; and paralysis of the bladder and rectum.

Sulphur—Burning and tensive pain between the scapulæ; heat on the top of the head; palpitation of the heart; sleeplessness; this is of great benefit when other medicines do not seem to act well.

Tarantula—Consequences of fright and rheumatism; trembling in the left hand, aggravated by mental disturbances; after a fright; the limbs soon become involved; intense pain at night; rest and sleep are broken; itching and crawling in the lower extremities causes the patient to rise and move about the room; the symptoms are worse from bathing, and are relieved by fresh air; the mentality is diminished; inability to use the hands because of trembling; anorexia; constipation.

Zincum metallicum—General disturbance of the cerebro-spinal system; delirium; neuralgias; spasms; tremblings; hyperæsthesia; paralysis; it affects the nerve structure of the cord itself; spinal irritation; lancinating pains; stiffness; jerking sensations; incoordination; numbness; and formication.

Many other remedies may be indicated in the course of the various conditions arising in these trou-

bles, in consequence of which the Materia Medica should be frequently consulted by those who would achieve the utmost possible success in the treatment of this group of diseases.

CHAPTER VI.

THORACIC DISEASES.

Trachea—Bronchi—Lungs—Pleuræ.

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General Considerations.—The gross pathology and the symptomatic manifestations of disease differ in children from the phenomena found in adults suffering from the same thoracic disorders. The difficulty of obtaining subjective symptoms is readily understood; and the so-called objective data are not so classical as in the developed adult, for various anatomical and physiological reasons. It must be remembered that the conditions prevailing at birth and during the subsequent five years of life are of importance in modifying both pathology and symptomatology. The bronchi occupy a relatively larger area of lung space, the air-cell cavities are smaller, the vesicular walls thicker, the interstitial tissue is greater in amount, the epithleial cells occupying the air cells more numerous relatively (and less stable and more prone to rapid cell-division) than in adults. The anatomical differences, and the tendency to rapid cell-division, make the pulmonary and bronchial mis-

chiefs of children of graver import than in adults, other things being equal.

TRACHITIS is usually an affection secondary to inflammatory processes in the air passages above or below. Atmospheric conditions, either excessive heat or cold, or dust, may produce a primary attack. The symptoms are irritating cough, which gentle pressure over the trachea will excite. The writer has seen many so-called bronchites in children that were really trachites. According to my experience it is best diagnosed by the presence of very large bubbling sounds, with occasional huge dry rales heard only over the sternum and between the scapula, high up, rales being heard in no other part of the chest. I have observed cases which I thought were due to violent, long-continued spells of crying. The old school douche the neck with cold water several times a day to remedy the ailment. *Antimonium tartaricum*, *hydrastis*, and *natrum muriaticum* are of service. The prognosis is, of course, favorable in simple trachitis.

BRONCHITIS (of the large tubes) may be either primary or secondary, and owing to the anatomical peculiarity in children of the prominence of the capillaries and the loose connection of the mucous membrane to the muscular walls render the bronchial structure specially liable to congestion and inflammation. Sudden atmospheric changes, dust, etc., and possibly micro-organisms, are the special causes. Bronchitis nearly always accompanies measles, pertussis, la grippe especially, and sometimes also the exanthemata, rhachitis and enteric fever, and tuberculosis. Pathologically, bronchitis gives rise primarily to

congestion of the mucous membrane, swelling and arrest of secretion of the mucous glands, with enlargement of the bronchial glands. Secondarily, the congestion diminishes, then occurs hypersecretion of the mucous glands, desquamation of epithelial cells, and an increased formation of the deeper layers of the same cells, and a moderate escape of white blood corpuscles and occasionally red ones. As a rule, in uncomplicated cases, all the processes are superficial. Symptomatically the onset of bronchitis differs from a convulsion in a gradual and insidious approach, beginning very generally with an inflammation of the nasopharynx. The temperatute in only rare instances goes much beyond 102 degrees F. Cough is the prominent system, dry at first, and loose sounding later. The disease lasts from one to two weeks in uncomplicated cases. The diagnosis must be made by exclusion. The physical signs are, where the case is uncomplicated by collapse of air cells, a pre-existing pulmonary disease, a normal percussion note, with dry rales of large size at first and large moist rales later. The rales are large, unless here and there the smaller tubes are involved, when a few sibilant and small moist rales may be heard. The rales are best heard on the posterior aspect of the chest. The prognosis is guarded in the weak, although in general favorable. A warm room, counter irritation, *wine of ipecacuanha* and *tincture opii camphorata* appears to be the most successful treatment of the old school. *Belladonna*, *bryonia*, *antimonium tartaricum*, *antimonium iodatum*, *stannum iodatum*, the *calcareas*, *ipecacuanha*, *sulphur*, and a host of other medicines are useful in our own school.

Bronchitis (of the small tubes, the misnamed capillary variety), is characterized by the same pathological changes as are found in the large-tubed inflammation, but the smaller tubes, in addition to the larger ones, are involved in a much more intense inflammatory process than in the ordinary form. Mechanical obstruction from the products of the bronchitis alter the symptomatology of the two diseases, give rise more frequently to atelectasis of air cells, and to broncho-pneumonia, and render the prognosis exceedingly bad, although not invariably hopeless if the general strength of the child can be maintained. Temporary small-tubed bronchitis occasionally occurs during the progress of the ordinary form, and persists for a few days, the case then progressing as in the typical large-tubed variety. The symptoms are cough, rapid respiration, quick pulse, cyanosis, dilatation of the alæ nasi, and an unwillingness on the part of the child to be placed in a recumbent posture (really, a relative orthopnœa). Coma and convulsions may close the scene. The physical signs are a normal percussion note, with subcrepitant and sibilant rales, together with large, moist, and dry sonorous rales distributed generally over the chest. If vicarious emphysema complicate, a vesiculo-tympanitic percussion sound is produced; if collapse of air cells, dulness, persisting only while the atelectasis lasts; if broncho-pneumonia, dulness on percussion, diminished respiratory murmur (or bronchial or broncho-vesicular breathing), localized high-pitched moist rales, all persisting until resolution occurs. The subcrepitant rale is the diagnostic feature of small-tubed involvement.

Aromatic spirits of ammonia, stimulants, emetics, as *ipecacuanha*, *turpeth mineral*, and *apomorphia* are used to combat the disorder. The same class of medicines are useful as are employed in the large-tubed variety, but *stibium arsenicum*, *antimonium iodatum*, *stannum iodatum*, *ipecacuanha*, and *kali bichromicum* and *pulsatilla* are of most service. Emetics early are injurious; later, when cyanosis and drowsiness supervene and the cough ceases, emetics must be used to unload the obstructed bronchi.

Bronchitis (chronic) follows occasionally acute attacks, but severe pertussis, rhachitis, and blood maladies and cardiac disorders are specially liable to cause it. The pathology is the same as in the acute variety, except that emphysema and dilated bronchi, and thickening of the mucous membranes, are liable to complicate. The symptoms are the same as in the acute variety, some cases showing anæmia, debility, slight febrile rise, and emaciation, while others are apparently well, save the cough. A dry but warm climate helps idiopathic cases. Tonics help all cases. The treatment must be specially directed to the underlying causes. The physical signs are the same in uncomplicated cases, as are found in the acute form.

Bronchitis (fibrinous, or pseudo-membraneous) is characterized by the expectoration or vomiting of casts of the bronchi, and this variety is rarely diagnosable as a separate form until the casts are discovered. Atelectasis is specially frequent. *Kali bichromicum* and *coccus cacti* are of use.

BRONCHO-PNEUMONIA (catarrhal pneumonia, lobular pneumonia, insufflative pneumonia, peribron-

chitis) is especially liable to occur in the young, either acutely or chronically, because of the embryonic type of lung tissue. It is frequently followed by or associated with tuberculosis, and in its origin it may be general or otherwise. It follows the ordinary forms of bronchial inflammation, due to atmospheric changes, but is especially prone to complicate the exanthemata, more particularly measles, scarlet fever, and pertussis and diphtheria. Those debilitated by previous illness or constitutional dyscrasiæ are its especial victims.

Pathology.—Broncho-pneumonia is characterized by an inflammation of the walls of the terminal bronchi and the surrounding and end alveoli. Consolidations are formed in various parts of the lung, distributed rather irregularly as a rule, and the involvement may not only be lobular, but exceptionally may be so extensive as to involve a lobe. The solidification is produced by the inflammatory products, plus proliferated epithelial cells, pus corpuscles, red corpuscles, and somtimes a small quantity of fibrin. Dilatation of the bronchi, emphysema, and fibrosis occur as consequences and sequences of the semi-bronchial inflammatory process. In the immediate vicinity of active lesions the unaffected portions of lung are congested. Both absorption and resolution of the proliferated cells is difficult, much more so than is a purely fibrinous exudate, and consequently the restorative process is imperfectly or not at all accomplished.

Symptomatology.—The symptoms vary much, depending upon the severity of the attack, the amount of lung tissue involved, and the presence of compli-

cations. In severe diseases the symptoms of bronchopneumonia are obscured by what is apt to be considered to be the major disorder. Cough, respirations more rapid than the degree of fever warrants, and increased elevations of temperature, should lead to a physical exploration of the chest in diseases likely to give rise to catarrhal inflammation of the bronchial mucous membranes and lung parenchyma. When the disease is well marked, fever, rapid respirations, quick pulse, dilated alæ nasi, cyanosis, drowsiness or wakefulness, and a painful cough are prominent. Sometimes there occurs a pause after inspiration, the following expiration being a moan. This symptom occurs, however, in other diseases where respiration is painful. The disease usually ends by lysis, and does not pursue any very definite course.

The physical signs are the rales, both large and small, and moist and dry, of the accompanying bronchitis; dulness on light percussion in spots of varying size, if the lesion be large enough to be determined by physical exploration; broncho-vesicular or bronchial breathing, increased vocal resonance or bronchophony. Sometimes over affected areas the respiratory murmur is suppressed, and the rales heard are high-pitched. If collapse occur the signs of this condition are added; and this is also true of an extensive vicarious emphysema.

Prognosis is guarded. Fulminant cases die in three or four days. If the temperature remains high after the second week, the outlook is gloomy. Death in many cases results from exhaustion.

Treatment.—The treatment consists in judicious

nursing, a warm room, ventilation, stimulants, warm baths, warm wet packs, and oxygen inhalations are employed, and the position of the child changed often. Cardiac stimulants may be needed during attacks of cyanosis. *Antimonium tartaricum*, *antimonium iodatum*, *antimonium arsenicum*, *stannum iodatum*, *ipecacuanha*, *kali bichromicum*, *phosphorus*, and *bryonia* are useful medicines.

LOBAR PNEUMONIA (croupous, fibrinous, pneumonic fever) is an acute self-limited lung manifestation of a disease possessing many of the phenomena of the infectious group.

Causes.—The diplococcus pneumoniæ is the determining, and sudden atmospheric changes, particularly cold, the exciting, cause of croupous pneumonia.

Pathology.—Lobar pneumonia is an acute exudative inflammation which preferably and progressively involves a whole lobe, the larger part of one lung, and occasionally portions of both lungs. The stages of congestion, red hepatization, gray hepatization, and resolution occur in the child very much as they do in the adult. In the congestive stage the affected portion of the lung parenchyma is hyperæmic and œdematous, and the air cells contain fibrin, pus, granular matter, red blood cells and epithelial cells, the epithelium of the air cells being swollen and the capillaries fairly filled with white blood corpuscles. The exudate becomes decolorized (gray hepatization), degenerates, and is generally readily absorbed.

Symptomatology.—Lobar pneumonia is generally ushered in suddenly by vomiting, convulsion, or noticeable fever. Pain soon follows, generally referred

by the unknowing little one to the abdomen. Painful cough is a common symptom, but may be absent early. There is rarely any of the rust-colored expectoration in children under eight years. Delirium and stupor are sometimes so marked that with the involuntary muscular movements of the head and body and involuntary urination and fæces may simulate some form of meningitis. Inflammation of the brain meninges sometimes actually occurs. Pulse and respiration rales are both increased, the latter more than the former. The temperature is high, 104 degrees or 105 degrees F. The disease ends suddenly, and may, and often does, give rise to great prostration and even collapse. The disease often, however, ends by lysis in children under three.

The physical signs over the implicated lobe are dulness and percussion (sometimes tympanitic, particularly if the abdomen is distended), bronchial breathing (bronchophony), if the consolidation be complete, and if incomplete, the signs indicating a lesser degree of solidification. The fine, dry crackling rale (the crepitant) is only occasionally observed. In the resolution stage subcrepitant rales are heard. The lung generally commences to clear up as soon as defervescence occurs, but the process of absorption may be delayed.

The prognosis, in general, is good. The treatment is mainly expectant. Stimulants may be used from the outset in the debilitated or very young. Collapse must be combated by warmth and stimulation, the latter per oram or per rectum. *Aconite*, *belladonna*, *bryonia*, *ferrum phosphoricum*, *sulphur*, *phosphorus*,

kali bichromicum, *iodine*, *ipecacuanha*, *arsenic*, and the *antimonies* are very useful.

PULMONARY TUBERCULOSIS is an affection in which certain lesions are said to be produced by the bacillus tuberculosis. The bacilli gain entrance into the body by inspiration or being swallowed.

Pathology.—The pathological lesions are numerous, and the same as occurs in adults. The apices are rarely first affected, as in older persons. The lymph glands are first attacked, as a rule, and after tuberculization, break down, invading the lungs. Acute tubercular broncho-pneumonia is one form, and chronic tuberculosis of the lungs another. The special features of the broncho-pneumonic form are the peribronchitis, the tubercular features being caseation and necrosis of the consolidations, together with the presence of the bacilli.

Age.—The disease develops especially from the sixth month to the fifth year, and may follow measles, pertussis, diphtheria, scarlatina, and tubercular processes in other parts of the body.

Symptomatology.—The symptoms are cough (expectoration, if the patient is old enough and knows how), fever, emaciation, night sweats, and the systemic symptoms of the accompanying fever and infection.

Prognosis.—The prognosis is invariably grave.

The physical signs are more likely to be found posteriorly, between the scapulæ and in the lower lobes, but no portion of the chest is exempt. Dulness on percussion, bronchial breathing, increased vocal resonance, and rales localized at the seat of

lesion, or general if the accompanying bronchitis is universal.

The treatment is a tonic one, *cod liver oil*, *hypophosphites*, forced feeding. *Arsenic*, *arsenicum iodatum*, *stannum iodatum*, *sulphur*, *baptisia*, and *iodine* are somewhat helpful. Climate is of more service than drugs or hygiene.

ASTHMA is rare in infants, but not uncommon in childhood. It is best defined as a neurosis of the pneumogastric nerve, characterized by paroxysmal dyspnœa, induced by varying conditions, determined by individual idiosyncrasy.

The pathology is unknown, but is most rationally conceived to be a tonic spasm of the bronchial muscular fibers, leading to a temporary narrowing of the lumen of the tubes, and consequent difficult respiration.

Symptoms are sudden shortness of breath, particularly at night, causing, in severe cases, orthopnœa, with anxiety, restlessness, and wheezing, the paroxysm ending, after a variable interval, in apparent health.

The prognosis as to the attack is favorable. Many attacks are accompanied by chronic bronchitis. Emphysema often results.

The physical signs are a vesiculo-tympanitic note on percussion, and an abundance of sibilant and sonorous rales all over the chest.

Treatment is to remove all diseases of the bronchi and naso-pharynx, as rhinitis, enlarged tonsils, adenoid growths, etc. Antispasmodics are used to control the paroxysms, as *belladonna* and *lobelia*, *hydrate*

of chloral and *morphine*. *Iodide of potassium* is of service. The inhalation of the fumes of *potassium nitrate* is the most common procedure. *Belladonna*, *lobelia*, *ipecacuanha*, *arsenic*, *kali carbonicum*, *sambucus*, *nux*, *stramonium*, *hyoscyamus*, and many other drugs have proven effective.

DISEASES OF THE PLEURÆ.

PLEURITIS (pleurisy) is an acute or chronic inflammation of the pleural membrane, which may be dry, or, as is most frequently the case, accompanied by a serous, sero-purulent, or purulent effusion. The disease is much more frequent in children than is generally supposed, and the effusion is more apt to be purulent in children than in adults. The pleural affection may be primary, secondary, or complicating, and seems to follow all kinds of exposure and infection by all sorts of micro-organisms.

Pathology.—Pleuritis is generally an unilateral disease, characterized first by an exudate of fibrin, followed by liquid, and subsequently, if the fluid be absorbed or removed, by adhesion of opposing membranes, sometimes leading to obliteration of the pleural cavity.

The symptoms are, in general, a sudden onset, restlessness, and even pain (generally referred to the abdomen), short, dry, painful cough, anorexia, vomiting, diarrhœa. When effusion is complete the pain lessens, the dyspnœa is less severe, the temperature remits in the morning, the child, if the effusion be large, prefers the affected side. If the case runs beyond ten days before absorption is complete it is likely to become chronic.

The physical signs in the dry stage are often difficult to detect, inasmuch as the pleuritic rub is not always heard, but there is tenderness on the affected side to palpation, percussion, and compression. When effusion has taken place, dulness on percussion, diminished respiration, or distant bronchial breathing, and sometimes a decrease of the vocal resonance, and fremitus, together with displacement of the heart if the effusion be great. Variations in fremitus and the resonance of the voice are less marked in the pleuritis of children than in adults. Displacement of the heart, liver, and spleen, and bulging of the chest walls, obliteration of intercostal spaces, speaks for the presence of fluid. The dulness on percussion can in some instances be made to change its level, and assists thus in distinguishing pleuritis from lung affections, for which it might be mistaken. Aspiration is not a conclusive means of diagnosis; fracture has been made, and no fluid has followed where fluid really existed.

The prognosis is, in general, good, if the effusion be simple serum and the fluid is not effused too rapidly and does not greatly displace the heart.

The treatment early is to relieve pain by a flannel bandage, *tinctura opii camphorata*. Later, aspiration, if necessary to remove intra-thoracic pressure or to assist absorption. *Sulphur*, *bryonia*, *arsenicum iodatum*, *apis*, *silicea*, and *apocynum* are all useful medicines. If aspiration is necessary it is best performed, in general, in the fourth or fifth interspace, in or a little back of the axillary line.

PURULENT PLEURITIS (empyema) is a purulent

collection of fluid in the pleural cavity, derived from a primary inflammation therein, or from the rupture of a purulent fluid into the sac from some one of the adjacent or surrounding organs. Pus as an effusion is much more frequent up to four years than is a serous fluid.

The symptoms are the same as those found in a simple serous effusion. The temperature is no definite guide. Œdema of the chest walls suggests empyema, as do symptoms indicating great gravity of the disease process, but the only positive differentiation is to be made by aspiration or the introduction of a big lumened needle of the hypodermic syringe and the macro and sometimes microscopic examination of the fluid thus obtained.

The physical signs are the same as in ordinary pleuritis with effusion; *i. e.*, they indicate the presence of fluid.

Course.—The disappearance of an empyema without surgical interference or the imperfect surgery of Nature is the rarest possible occurrence and should never be expected. The pus may make its exit by perforating the lungs and escape into bronchi, forming a pneumo-pyo-thorax; it may break through the chest walls, preferably in the region of the fifth intercostal space (I have seen two cases where "spontaneous" perforation occurred in the second left intercostal space—a most disadvantageous position for drainage); it may ulcerate through the diaphragm and set up a fatal peritonitis, or in fact break into any organ near by that favoring factors permit. When Nature attempts the evacuation (and sometimes, too,

when it accomplishes it) of the pus, great deformity of the chest results and extensive adhesions are formed.

The treatment is essentially that of aspiration, as frequently as is necessary, a resection of the ribs if the case does not yield to repeated tappings. Tonic treatment is indicated, the *calcareas* the *arseniates*, *silicea*, *hepar sulphuris*, *fluoric acid*, *sulphur*, and other medicines are sometimes of value.

DISEASES OF THE HEART AND PERICARDIUM.

General Considerations.—Cardiac disease in the early period of life, in some respects, differs essentially from the same disease in adults. In certain forms in children there is much greater tendency to recover than in those who are fully developed. Owing to the undeveloped condition of the very young, interference with growth of other organs and the body generally occurs in consequence of cardiac diseases; results occur that it would be impossible for the same disease to produce in the fully developed adult. The soft condition of the ribs, cartilages, and sternum, when the heart enlarges, permits of the formation of serious chest deformities, encroaching on the lung space, and destroys the possibility of the development of the perfect lung equilibrium found in the healthy. The blood vessels themselves are much more rarely affected in children than in the older. Aneurism is extremely rare. A narrowing of the isthmus aortæ is, according to Rotch, more common, and is one of the most marked of the congenital defects of the blood vessels.

CONGENITAL DISEASES usually result from an

interference with the proper development of the organ, from endocarditis, or from both combined. At birth the great points of failure are the *foramen ovale* and the *ductus arteriosus*. Both should be closed by the tenth day. Where the heart has been defectively developed during intra-uterine life, the chief malformations are an open ventricular septum, a transposition of the great vessels, and valvular and orificial deformities. The most common results of fœtal endocarditis are stenosis of the pulmonary artery, narrowing of the *conus arteriosus*, and distortion of the tricuspid and other valves and orifices. Fœtal endocarditis is, according to Osler, rarely verrucose, the variety being sclerotic.

The symptoms of congenital heart disease are sometimes indefinite for some time after birth, but in a large proportion of cases evidences of embarrassment of the circulation are manifest. It is true, however, that grave cardiac disease may exist without signs or symptoms. Cyanosis and attacks of shortness of breath (sometimes almost suffocative), and wasting, are the prominent symptomatic guides. Later, the finger ends become clubbed, the nails blue, the skin cool.

The physical signs are seldom sufficient to determine the exact form of deformity. There is generally decided pulsation in the præcordia, with bulging of the cardiac region, and, if the heart be much enlarged, the area of cardiac dulness augmented. Diffuse cardiac murmurs may sometimes be heard over the whole chest, are commonly located with the first sound of the heart, and are most intense towards the upper part of the sternum.

Prognosis.—Children with congenital heart disease are apt to die suddenly. Lesions of the pulmonary artery, if associated with a safety-valve ventricular septum, may permit of a number of years of life, while an open *foramen ovale* without other lesion, allows of life for years. Transposition of the main arterial trunks permits of but a short life. Death results suddenly, commonly from some pulmonary affection, hemorrhage, or tuberculosis.

The treatment includes freedom from excitement and overexertion, *aromatic spirits of ammonia* during pronounced dyspnœa, and the cardiac tonics when compensation fails.

Therapeutics.—*Cactus*, *lachesis*, *arsenicum iodatum*, *rhus toxicodendron*, *silicea*, and *sulphur* are suggestive medicines.

FUNCTIONAL DISEASES rarely, if ever, occur until the later years of life, and arise from anæmia of the nerve centers and from mal-feeding, masturbation, and cardiac irritants, such as tea and coffee.

Pathologically the cardiac muscle may be slightly weakened and a minor degree of possibly transitory dilatation.

While **symptoms** differ in individual cases, they are in the main palpitation, weak irregular pulse, attacks of shortness of breath, and fainting, and occasionally hæmic murmurs. If the cause can be discovered and removed, a cure soon results.

Therapeutics.—*Spigelia*, *cactus*, *digitalis*, *kalmia*, *rhus*, *aconite*, *belladonna*, and *ferrum* are good remedies.

ORGANIC DISEASES may be of mechanical or

inflammatory origin, and originate primarily or secondarily. Both dilatation and hypertrophy are considered mechanical.

Causes.—Primary dilatation may occur at puberty and as the result of overexertion, and secondary hypertrophy from pericardial and pleuritic adhesions, lung consolidations, pertussis with its accompanying emphysema and atelectasis, or increased blood pressure, as from renal disease or aortic stenosis or other valvular lesions; while among the inflammatory diseases we may have primary or secondary endocarditis, and myocarditis, secondary to rheumatism, the exanthemata, diphtheria, pneumonia, enteric fever, or recurring endocarditis with extension to the muscular structure.

Diagnosis and Physical Signs.—In the pre-natal organic heart disease the right side, and in post-natal the left side, is the more likely to become affected. Murmurs indicating lesions are apt to be diffused all over the chest in children, and do not travel so readily in the typical paths of transmission as in the adult. In children alterations in the rate and rhythm are less significant than in similar diseases in the old. Compensation is more readily established in the young. Pericardial adhesions are much more frequent in early life. A just appreciation of the period of development is of first importance in the making of diagnoses of disease in infants and children, particularly in diseases affecting the heart or lungs. The large size of the liver, the greater proportionate size of the heart to the lung in the earlier years of childhood, may lead, if not taken into account, to errors

in diagnosis. In infants the dulness in the superficial cardiac space can only be elicited by the lightest percussion, and does not extend over an area much larger than the point of the pleximeter finger, while from the fourth year to perhaps the ninth, relative dulness in the præcordia is more marked than in the adult, and the superficial cardiac space is easily outlined. Other things being proportionately equal, the liver grows more after the adult pattern the older the child, more of stomach percussion is present, and the kidneys posteriorly and the top portion of the sternum become relatively lower.

The symptoms indicating organic disease are not always distinctive; in fact, the physical signs may tell you of the presence of an unsuspected lesion, while on the other hand cases are occasionally found in which cardiac symptoms are most pronounced, and yet no physical signs are discoverable. In the very young the impossibility of controlling respiration long enough to systematically study the heart sounds and the modifications due to disease may account for some failures to discover the physical evidences of organic disease. Progressive emaciation, shortness of breath, cyanosis, sometimes dropsy, and sudden alterations in color, or distended arteries or veins, may lead to the suspicion of the presence of a cardiac affection.

ENDOCARDITIS is the most common cardiac disease of children, and may be acute, chronic, recurring, and primary or secondary.

Cause.—Later investigators believe that all endocardites are bacterial in origin, there being, however, no special kind necessary to produce the inflammatory

process, the streptococcus pyogenes, staphylococcus pyogenes aureus, the diplococcus pneumoniæ having all been found. It does not seem necessary, therefore, to distinguish between simple and ulcerative (malignant) endocarditis, there being simply a difference in degree of the malignant nature of the especial organism which has produced the disease or in the special vulnerability of the attacked individual.

Pathologically the endocardium, particularly about the valves, is swollen, thickened, and the subserous tissue infiltrated. Vegetations, abrasions, and new connective tissue are sometimes noted. In some instances, where marked cardiac symptoms and signs have been present during life, *post-mortem* shows no lesions. In some instances, undoubtedly, the valves return to their normal condition.

CHRONIC ENDOCARDITIS may be chronic from the onset, or succeed an acute attack.

Pathology.—The aortic and mitral valves are specially liable to be affected. The endocardium may be thickened and tense, its surface smooth or covered with small vegetations or ridges, or an overgrowth of connective tissue cells with a splitting up of the basement substance.

Causes.—It is specially liable to arise from preexisting lesions, from rheumatism, chorea, scarlatina, and other exanthemata, and diphtheria. Myocarditis may be present also, the walls of the heart participating in the inflammatory change, involving primarily the intestinal tissue and blood vessels, the muscular fibers being secondarily affected by atrophic and degenerative changes.

The symptoms of endocarditis are often as obscure as in the adult, even more so, frequently being altogether latent in infants and children. When arising secondarily the symptoms are especially liable to be masked. Palpitation, dyspnœa, cyanosis, with possibly vomiting, and irritative cough are often, however, pronounced, and are especially so if the myocardium be involved. In primary cases there is generally a rise of temperature, a quickened, sometimes irregular and weak pulse, palpitation, dyspnœa, and præcordial distress. If dilatation supervene, and it sometimes does even in acute cases, general venous stasis, enlargement of the liver, hæmoptysis, bronchitis, œdema of the face, legs, and arms, and anæmia appear. Hemiplegia from embolism may occur.

The diagnosis is usually not difficult, although lesion exceptionally exists without murmurs. The presence of a murmur at the point of attack is the diagnostic feature. The murmur grows in intensity daily under your observation, it is seldom diffused or transmitted in the earlier part of the disease, in the experience of the writer. If considerable enlargement of the heart can be made out, with a distinct transmission in a typical direction, as in old compensated lesions in adults, the lesion is an old one, or there is a new endocarditis. In long continued cases you can observe the compensatory enlargement gradually taking place. Presystolic, systolic, or diastolic thrill can sometimes be elicited by palpation, at the proper valve or opening, and its presence is just as diagnostic as is a murmur heard during auscultation. Of course there may be several lesions at the same

time, with their corresponding presystolic, systolic, or diastolic murmurs and points of maximum intensity.

The prognosis in acquired endocarditis is favorable. Death, however, may occur at the height of the attack or suddenly from heart failure.

The treatment is rest in bed and the control of special symptoms. We should endeavor to accomplish compensation from the very outset. Sleep should be encouraged, as it often reduces a child's pulse twenty per minute. Baths and gentle massage are useful in regulating the cutaneous circulation. *Digitalis* and *iron* can be used, and *nitro-glycerine* controls the excessive attacks of dyspnœa. *Aconite belladonna*, *rhus*, *spigelia*, *kalmia*, *lachesis*, *kali carbonicum*, *sulphur*, *silicea*, *aurum*, *digitalis*, and *bryonia* are useful medicines.

MYOCARDITIS, when it occurs in connection with endocarditis, can be suspected when the symptoms of the latter disease are especially violent and malignant.

Diagnosis.—Occurring without valve implication, myocarditis may be judged to be present when early or late in adynamic diseases, the first sound of the heart nearly disappears, the pulse thready, and symptoms of collapse and blood-poisoning are noted.

The prognosis is unfavorable in the secondary cases, although less so than in the adult.

The treatment is essentially supporting and tonic, with absolute rest.

DISEASES OF THE PERICARDIUM.

General Considerations.—There is nothing spe-

cially distinctive anatomically in a child's pericardium. The amount of fluid present, however, while variable, is probably under five cubic centimeters. Complete or partial absence of the pericardial sac has been noted.

Hydropericardium, **hæmopericardium,** and **pericarditis** occur, the latter much more frequently than the others, and is, with extreme infrequency, dry, being specially characterized by effusion in children. The remains of pre-natal pericariditis have been observed in *post-mortems* made in infants who died a few hours after birth.

Etiologically a number of micro-organisms give rise to pericardial inflammation, the micrococus lanceolatus more often than other varieties. Cases in infants follow sepsis from the cord; periostitis, ostitis, traumatism, rheumatism, pneumonia, pleurisy, the exanthemata, especially scarlet fever, and tuberculosis have causative relationships.

Pathologically pericarditis may be circumscribed or diffused. The effusion may be sero-fibrinous, hemorrhagic, or purulent; in fact, it is more apt to be purulent in children than in adults. An effusion tinged with blood is not uncommon, and is not so significant of tuberculosis as in the adult, although a pronouncedly hemorrhagic fluid usually has the same significance as in the older. The pericardites may be acute, chronic, primary, or secondary.

The subjective symptoms in infancy and childhood are of the vaguest sort, are often latent, and where pronounced symptoms are present they are of the general kind and refer as much to the heart and

circulation as to the pericardium. Pain is difficult to locate and palpitation and irregularity are so common in general diseases affecting children that it is not possible to formulate definite symptoms as characteristic of the outset. Dyspnœa, orthopnœa, possibly dysphagia and slight cyanosis, and palpitation are significant of considerable effusion.

The physical signs, in typical cases, without adhesion, and with the friction sound present and the typical area of dulness, are easy of diagnosis; but, owing to the varying degree of lung elasticity, the presence of thoracic or liver disease, together with the fact that the apex beat is higher up and not so frequently displaced as in the adult, and the heart sounds are not muffled and distant, at times makes the diagnosis a most difficult one. If adhesions have occurred, destroying the typical dulness of effusion, the problem is still more doubtful. The chief disorder from which it must be separated is enlargement of the heart, and more especially dilatation. Here the main distinguishing sign is found by percussion. Enlarged heart does not extend its dulness so far to the right as does effusion. When there is fluid in the pericardial sac the dulness is noticed to the right, and is noticed in the fifth interspace; in enlarged heart the dulness returns to the sternum at about the fourth rib. It is seldom indeed, if ever, from the observations of Rotch, that the dulness of an enlarged heart implicates and includes the fifth right interspace.

The prognosis in infants is bad; the cases usually soon end fatally. In late childhood there is the same tendency to recovery as in adults. One of the least

favorable of *sequences or complications* is the adhesion of the two layers of the pericardium (making the diagnosis especially difficult), which may paralyze the cardiac muscle, or from the resulting stasis of blood may lead to extensive dropsy.

Symptomatically this form of cardiac paralysis is characterized by a small, frequent pulse, subnormal temperature, slight albuminuria, and œdema of the cheeks, eye-lids, and lower extremities.

The treatment is the same as in adults, but heart failure, so likely to occur in childhood, is to be especially fought. Absolute physical and mental rest must be enforced. Early, before much effusion has taken place, cold applied to the præcordia is sometimes helpful. *Digitalis*, and the free use of stimulants, is often indicated. If the symptoms are alarming, paracentesis of the pericardium should at once be performed, and not in the left fifth intercostal space, as is ordinarily taught, but in the fifth right intercostal space (according to Rotch). *Aconite*, *belladonna*, *bryonia*, *spigelia*, *digitalis*, *sulphur*, *kali carbonicum* and *iodatum*, *arsenicum iodatum*, *kalmia*, and *cactus* are useful medicines.

CHAPTER VII.

DISEASES OF THE DIGESTIVE TRACT.

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AUTHORITIES.

A short list of the recent books upon pædology which seem to the writer to treat most fully upon this branch of the subject is herewith appended for the benefit of students:

Keating's Encyclopedia of the Diseases of Children, 4 vols. J. B. Lippincott, Philadelphia, 1890. The best compendium in the English language.

Starr, Louis. The American Text-book of the Diseases of Children. W. B. Saunders, Philadelphia, 1895.

Donkin, H. Brofau. The Diseases of Children (Medical). Wm. Wood & Co., New York, 1893.

Fisher, Chas. E. Handbook of the Diseases of Children and Their Homœopathic Treatment. The Century Pub. Co., Chicago, 1895.

Tooker, R. N. The Diseases of Children and Their Homœopathic Treatment. Gross & Delbridge, Chicago, 1895.

The field of practice outlined by this heading comprises at least one-half the ailments of infancy and childhood, and can by no means be fully treated in the space allotted in this brochure. The writer will attempt simply a *resumê* of the salient and practical

features of the causation, symptomatology, and treatment of the more common diseases.

The successful management of the infantile diseases of the digestive tract implies a complete practical knowledge of the diet and hygiene of that period of life, and withal a natural love for children as well as tact in their management, without which practice among children will be the bane rather than the joy of everyday work.

In these pages the natural anatomical order will be followed in the classification:

I.—MOUTH.

Diseases of the mouth in children are inflammatory, and, with the single and rare exception of gangrene, confined to the mucous membrane.

CATARRHAL (Simple) **STOMATITIS,** or "nursing sore-mouth," is a simple hyperæmia of this cavity, due to local irritation, or not uncommonly it is the visible evidence of a disordered stomach, or an accompaniment of such constitutional diseases as tuberculosis or rickets, or of any of the eruptive diseases. Because this form of stomatitis is most common during dentition, that process itself is probably a cause, in that it renders the infant more sensitive to cold or wet or improper hygiene generally. The mouth is reddened, its mucus increased, the tongue slightly furred, with more or less discomfort in the act of nursing, and only occasional bleeding. There is usually only slight fever and no general disturbance, unless the affection be an index of grave constitutional disease. The removal of any source of

irritation to the mouth in nursing or food, with frequent washing of the cavity with pure, cool water, a decoction of *marshmallow* or *linseed*, or *borax* and *glycerine*, generally suffices without a specific remedy.

ULCERATIVE STOMATITIS.—Ulceration of the mouth may sometimes follow upon catarrhal stomatitis, but stomacace or "putrid sore mouth," the affection usually known as ulcerative or ulcerous stomatitis, is a primary form of more intense inflammation, resulting in extensive ulceration especially of the gums, accompanied by much fetor of the breath; occasionally apparently contagious, and by some thought to be dependent upon a specific germ, although this is not yet established. The inflammation begins with small white or yellowish points of plastic exudation and ulceration along the gums, spreading irregularly to the buccal surface. The swelling and the grayish-pinky sloughs give the appearance of a deeper ulceration than really exists, nor does this form extend to involvement of the bone, except occasionally on the gums. The saliva is streaked with blood and is profuse; the sub-maxillary and the lymphatic glands of the neck are generally swollen. There will be more peevishness, more fever and more salivation and tenderness than in the simpler inflammation, and the face may be œdematous. *Mercury* causes in adults a typical picture of this disease, less often also *lead*, *copper*, and *phosphorus*.

Ulcerative stomatitis is distinguished from other diseases of the mouth by the appearance of the gums before uleration begins, by the irregularity and size of the ulcers, which in the folds may be elongated

and elsewhere of various shapes, and by the accompanying fetor which gives it its popular name. Severe cases of stomacace are rare in private practice, but are found in hospitals where occasionally it seems to be epidemic, and among children in unhygienic surroundings and in damp seasons. The ordinary case results favorably unless the patient is much debilitated or there is serious co-existing disease.

Treatment.—All food and drink must be bland and lukewarm. The treatment will be materially aided by washes of the *permanganate of potash* (one grain to the ounce) or *hydrastis* (one-half water). *Mercurius dulcis* is the chief remedy for the local condition, although *arsenic*, *hydrastis*, *muriatic acid*, etc., may be necessary for more general conditions.

APHTHOUS STOMATITIS.—Still another form of inflammation, more common in older children between the first and second dentition, is aphthous stomatitis, aphthæ, or "canker sore mouth." Aphthæ is a follicular inflammation, characterized by small, round, superficial ulcers, most frequently seen inside the lower lip, of clearly defined outline, extremely painful to touch, and of grayish appearance when mature. The increase of mucus and saliva in this affection is never sufficient to cause the offensive odor present in most inflammations of the mouth. Like the inflammation just described, aphthæ is commonly due to errors of diet, and a sequel of scarlatina, measles, and severe gastric and intestinal ailments; but generally heals in from three to twelve days, and does not necessarily preclude recovery when occurring in connection with severe disease. The "plaques" seen on

the hard palate, close to the velum, one on either side of the middle line, in poorly nourished children, are a rare form of aphthæ, and if persistent, are said to be a prognostic of ill omen as to ultimate recovery.

Treatment.—Dental authorities state that the application of a twenty per cent solution of *tri-chloride acetic acid* upon each ulcer is specific and gives very prompt relief. The use of mucilaginous washes, and *mercurius dulcis* or *arum triphyllum* is generally adequate treatment.

MEMBRANOUS STOMATITIS is that form of inflammation in which a so-called false membrane is formed in or on the mucous membrane of the mouth, said membrane leaving an ulcer when separated. It occurs mainly in diphtheria, and should be treated as part of that disease (*q. v.*).

THRUSH.—The most common form of stomatitis in early infancy is a disease of quite different nature from those thus far considered, viz.: thrush, white-mouth, sprue, or stomatitis mycosa, an affection accompanied by only slight inflammation of the mucous surface and characterized by the growth and development of a specific yeast fungus known as *saccharomyces mycoderma* (formerly *oidium albicans*). The spores of this vegetable fungus are evidently carried by spoons, bottles, and rubber nipples—some authorities claim that the maternal nipple is never a conveyor of this growth into the baby's mouth, and are there demonstrated to flourish only when the mucous surface or secretions are abnormal. Because acidity is the only quality yet fairly determined to be necessary in the mouth and its secretions in order to make

this fungus flourish, it is assumed, although not yet proven, that the fungus is identical with that which turns milk sour.

Before the patches of fungus appear, spores of the fungus may be found in the secretions. These patches are at first as small as a pin head, and closely resemble milk curds, being pearly-white in color and firmly adherent, but as they spread over the cavity and become older, they change to a faint yellow color and are easily detached. The whole buccal linings may be quickly covered, but without fetor or increased salivation; rather is the mouth dry and hot. No ulcerated surface appears upon the removal of the growths (except in severe marasmus), but rather a smooth, shining appearance from loss of the epithelial cells.

The fungi may spread further down the alimentary canal, especially in entero-colitis, which disease thrush is prone to complicate, but the meagre testimony to its having "gone through the child" and even appeared at the anus is probably apocryphal.

Treatment.—Thrush is not in itself a serious malady, but it is often an index of low vitality, and therefore of value in the prognosis of exhausting gastro-enteric diseases. Cleanliness of the mouth, that is, washing all parts after each meal, is the essential treatment. This may be accomplished by painting the mouth with a camel's hair brush wet in a solution of *glycerine* and *borax* (about 16 to 2 parts), or some dilute alkaline fluid as *vichy* or *lime water*, or spraying with a dilution of one drachm of *borax* or *sulphide of soda* to an ounce of water to which a little

glycerine has been added. This local treatment should be supplemented by the careful selection of the constitutional remedy necessary to correct the mal-assimilation or gastro-enteric symptoms present. Probably *calcarea carbonica* most often covers this ground.

CANCRUM ORIS, gangrene of the mouth, or noma, is a secondary disease sometimes consequent upon measles, small-pox, scarlet fever, severe ulcerative stomatitis, etc., consisting of a rapidly destructive necrosis of the cheek, gums, and denser tissues. This disease is very fatal, but fortunately also very rare in this country. Space forbids anything more detailed than this warning statement that this direful disease begins with all the visible signs of simple stomatitis, and that the thickening and dark-red hue of its initial point, together with its rapid progress, are attended with less pain than in other forms of stomatitis. Of course prostration, emaciation, and the conditions that accompany gangrene of any part soon make a mistake in diagnosis impossible.

The lesser and rarer affections of the mouth, such as gumboil, glossitis, ranula, etc., need be mentioned only by name. Of ranula, however, it is noteworthy that recent research shows it to be a mucoid degeneration of some of the lobules of the Blandin-Nuhn gland, situated in the floor of the mouth and immediately under the tongue, and not an accumulation of saliva from Wharton's duct, as formerly thought.

DENTITION.—The teeth are so much in evidence in growing children that a word concerning dentition seems necessary. It goes without saying that the teeth are in the gums before the child is born, and

that the process of pushing them through the gums sometime between the sixth month and the latter half of the third year of life is a physiological one, and seldom in itself a cause of disease. However, in this "nervous age," the normal course, at least in the middle and higher walks of life, is the exception, and rather the high functional activity and rapid general tissue changes of this period of life often combine to make the evolution of the teeth a critical process. Restlessness, in delicate infants a temporarily high temperature, and an irritability of the stomach even with vomiting, diarrhœa, or convulsions, are some of the not infrequent evidences of irritation during the eruption of the temporary or milk teeth. But the gums are not to be first attacked as the primary cause of the disturbance. Donkin would treat the above and other gastro-intestinal symptoms supposed to arise from the teeth upon their own merits, and never give medicine upon "teething" symptoms alone. He is undoubtedly right in believing that when a child so suffers, something is wrong with his nourishment, and therefore would carefully scrutinize his diet and general hygiene. Yet it seems the other extreme to say with the same writer that no benefit, local or remote, ever comes from lancing the gums. The writer believes that there must be a middle ground of common sense between the recent high authorities on children's diseases who quite condemn lancing, and the dental surgeons who always unqualifiedly favor it. He has certainly occasionally seen the thorough cross-scarification of hot and swollen gums, and the consequent relief of pressure not only

upwards but downwards, and the complete freeing of the tooth, cause prompt cessation of serious reflex symptoms. All writers and teachers agree that symptoms occurring during this period of dentition should be promptly met by remedies, especially "colds" associated with loose lienteric stools, gastric ailments, or nervous manifestations. In our therapeutics the all powerful remedy for any and all of these complaints will be found to be *calcarea carbonica.*

Children should be early taught to keep their teeth and gums clean. Such care pays, in later life, large interest on the necessary patience and persistence originally invested. One writer thinks that mothers should have taught their children by the end of the second year to keep their teeth clean. Be this as it may, the mother's duty of cleanliness certainly begins with the very first teeth. When from neglect or bad inheritance the first teeth decay early, it is bad practice to remove them, since they are needed to preserve the contour of the jaw for the proper eruption of the permanent teeth. The homœopathic physician will first seek to arrest this decay by such remedies as *kreosote*, *staphysagria*, *mercurius*, *fluoric acid*, etc. The application of a strong solution of *nitrate of silver* will generally check superficial caries. If these do not succeed, such teeth should be by all means preserved by the dentist's art, for two reasons, viz., first, the one mentioned above as the objection to their early removal, and second, the severe indigestion which will surely follow the child's bolting its food because of its sore teeth.

The eruption of the permanent teeth takes about

as many years as that of the temporary does months, and is therefore usually quite free from any complications.

II.—STOMACH.

DYSPEPSIA.—In infants and children functional disturbances of this organ are far more frequent than actual pathological lesions, and therefore the general term dyspepsia first deserves attention. Defects in feeding, errors in hygiene, constitutional disorders, and certain inheritance commonly cause attacks that do not reach the intensity of actual inflammation of the stomach, and cause no lesion, but are evidence of lowered nervous force and require as careful attention from the practitioner as affections with a more specific or higher-sounding name. Most text-books describe the following conditions under acute gastric catarrh, but they will be found to be purely functional.

Symptoms.—Brought about by any of the above noted general causes, they are evidenced in infants by pallor, weakness, moaning cries, hot dry skin, restless broken sleep, the whole train of symptoms being perhaps relieved in a few hours by profuse vomiting of curdled milk, or there may be a slight elevation of temperature, tender epigastrium, and constipation, relief coming physiologically by a brief diarrhœa of undigested food. If nausea and vomiting be the most striking symptom, it is best to give nothing but pure water and allow Nature to effect relief by full emesis, always remembering that such vomiting may usher in many serious forms of infantile diseases. The writer believes that very young children, even infants, commonly from too much or improper feed-

ing, have attacks similar to those called "bilious" or "sick-headache" in adults, and that their entire abstinence from food and perfect quiet is the proper treatment. Children of nervous, rheumatic, or tubercular inheritance are more liable to such attacks than others and with them convulsions often complicate. Not infrequently is this tendency to dyspepsia apparently a direct inheritance from one or both parents, and then a source of constant solicitude until the close of dentition.

In older children, flatulence, attacks of abdominal pain or severe colic, a peevish whining disposition, night-mare and a more or less constantly coated tongue and foul breath, are indices of this condition. With them and with younger children the cautious physician will have in mind when called to these "stomach spells" the possible onset of severe acute disease and carefully examine the throat, chest, and the urine at his first visit.

Chronic Dyspepsia.—When these conditions of dyspepsia become chronic they are still of paramount interest to the practitioner, since they try his patience and ability to the utmost. The books describe what is here meant under various headings, *e. g.*, marasmus, inanition, wasting, athrepsia (MM. Parrrot and Robin), and congenital dyspepsia (Tooker). These terms all refer alike to functional impairment of the digestive apparatus, without any ascertainable lesion, and are easily distinguishable from the acute and certain chronic gastro-intestinal disorders by lack of continued fever.

Treatment.—In the treatment of these cases the

simpler the methods the more successful the results. Minute attention to every detail of the child's life, *i. e.*, dress, bathing, ventilation, rest, exercise, as well as diet, are absolutely essential to the cure of these tendencies. *Calcarea carbonica* in infants, and *nux podophyllin*, and *sulphur* in older children, are perhaps the most commonly indicated remedies.

ACUTE GASTRITIS.—If it be remembered that true gastritis is an inflammation of the stomach involving all its coats and is therefore of rare occurrence in children, being then due to external injury or internal and extraordinary irritation, the term, as usually applied to an acute catarrhal inflammation of the mucous membrane of the stomach, gastric catarrh, will be clearly understood. Such attacks are amazingly common in children, from defective feeding, insufficient clothing, bad sanitation, dentition, or from all combined to reduce the resistance of the child; or less often, from too hot or too cold liquids or irritant emetic drugs. The symptoms are those described under dyspepsia in an aggravated form. Vomiting is more constant and may extend to retching of a little bile-stained mucus or even blood; the tongue is heavily coated, often with raised, reddened papillæ, as in the beginning of scarlet fever, for which these attacks are sometimes mistaken; breath sour and disagreeable, epigastric tenderness, temperature to 102 degrees and above, and constipation; nervous symptoms are not uncommon, even to convulsions in infants.

Treatment.—The first essential of treatment is absolute rest of the afflicted organ, best accomplished

by putting the patient to bed and giving nothing but water or cracked ice, the latter especially if there be much vomiting. If, after twenty-four hours or more of such rest, neither barley or rice water, milk and water, or mutton broth can be borne, nutrient enemata should be given and kept up until the inflammation has subsided; then such foods as predigested milk and light broths until the tongue clears and the appetite asserts itself. *Bryonia*, *calcarea carbonica*, *arsenic*, and *argentum nitricum* are perhaps most often indicated. Repeated attacks of this kind should warn the practioner of a possible neurosis, such as *la petit mal.*

CHRONIC GASTRITIS.—Chronic gastritis is most often seen among children of the poorer classes, from overcrowding and unhygienic living, especially the allowing of table food too early.

Symptomatology.—They suffer from irregular vomiting, oftentimes of fragments of food and an acid fluid, fetid eructations, red dry lips, and a constantly coated tongue, constipation with much straining and hard scybalous stools. The child begins to emaciate and its features grow pinched. This may go for months, when finally all food is rejected by more frequent vomiting, the temperature drops below normal, the secretions and excretions become sour and fetid, and the patient sinks into stupor and dies from exhaustion. This condition need not be confused with chronic dyspepsia, at least until emaciation is quite marked, for there is always some fever in chronic gastritis.

Treatment.—In prescribing for this form of gastritis, any remedy, selected with the greatest skill

from the whole materia medica, may be the curative one, and moreover the patient will often thrive in convalescence upon what a properly acting stomach would scorn. Especially essential to recovery is warmth of the body and abundant fresh air and sunshine. These are the cases also in which lavage is sometimes employed to great advantage.

Such rare diseases of the stomach in children as stenosis, dilatation, ulcer, and hemorrhage are best studied in Keating or works on general practice, bearing in mind the fact that such conditions are more dangerous and more apt to be quickly fatal in children than in adults.

Vomiting, while merely a gastric symptom, deserves a moment's special consideration. In infants, owing to the more vertical position of the stomach, it is a physiological act and a relief to an overloaded stomach, but is often converted into a pernicious habit by either laying the baby down or bringing it into an upright position too soon after its meal. Indigestion commonly accounts for it in older children, although many acute diseases of childhood begin with sudden and violent vomiting. Vomiting at any age of childhood may also be reflex from tumor or inflammation of the brain, pertussis, chronic lung disease, dentition, or worms. That from brain disease is most serious, and is recognized by its suddenness and irregular appearance, the absence of gastro-intestinal symptoms, a clean tongue, and such cerebral symptoms as headache, weak vision, general muscular twitching, and probably an intermittent pulse.

III.—LIVER.

ICTERUS (Jaundice).—The radical changes in the circulation consequent upon birth account for the yellowness of the skin which commonly follows the first congestion of that covering (as after bruises in later life), but this does not constitute true icterus, unless the conjunctiva and urine are discolored. "Icterus neanatorum," or the mildest form of jaundice, appears most commonly in those born prematurely or asphyxiated, or those enfeebled by prolonged labor or any other cause, and is therefore most often seen in foundlings (seventy per cent). Appearing upon the second or third day of life, it causes no greater disturbance than a loss of weight and perhaps a slower gain for a time thereafter, and generally disappears in a few days with systematic and careful feeding, and possibly occasional doses of *chelidonium* or *podophyllin.*

Grave forms of icterus in infants may appear later than the third day with discolored conjunctiva and urine, enlargement of the abdomen, progressive wasting, and generally death. Malformation of the bile ducts, congenital syphilis, and more rarely and most fatally, septic poisoning from umbilical phlebitis, with oozing of pus and blood and an elevated temperature in the latter instance, account for those cases.

In older children jaundice is usually the most troublesome symptom of some occlusion of the bile ducts, either from a plug of inspissated bile, gall-stones (rarely), a round worm (occasionally), catarrhal inflammation of the duodenum or inflammation of the liver itself, due to malarial or drug poisoning. Duo-

denitis or gastric-duodenitis is present when nausea and vomiting, with tenderness in or just below the epigastrium and pain some hours after taking food, accompany the icterus. The **stools** in this form will be the natural brownish-yellow, unless the obstruction is complete, when, even without the above inflammatory conditions or any especial change in nutrition, the stools contain undigested fat and are clay-colored from total absence of bile. Constipation, a slower pulse, and mental hebetude, from the sedative effects of the biliary salts upon the circulation, complete the picture which may last days or even weeks.

Treatment.—The inflammatory symptoms should be treated upon the indications, probably with such specific drugs as *podophyllin*, *hydrastis*, *chelidonium*, *mercurius dulcis*, *phosphorus*, and *kali bichromicum*. If purgatives seem necessary at first, never use irritating drugs, but rather such mineral waters as *Carlsbad*, *Vichy*, and *Congress*. Only easily digested, mainly liquid, foods without fats are allowable, with free use of lemon or lime juice in chronic cases. The catarrhal tendency underlying the latter cases must be reached by a remedy that covers more than the local symptoms. Daily warm baths are of great benefit.

There is not space for anything more than mention of the rare forms of liver affections in childhood, such as fatty or amyloid infiltration, hydatids, abscess, tumors, etc., evidenced by enlargement of this organ, or the still rarer diseases accompanied by contractions, as cirrhosis, and acute yellow atrophy. (See Keating, vol. III, pp. 422–515.)

In growing children nurtured in "the hot bed of modern civilization" the livers often become like those of the Strasburg geese, congested and enlarged as the result of overfeeding, overheating, want of exercise and fresh air, and causing frequent indigestion, languor, and irritability, even without actual jaundice. Common sense indicates the proper treatment of such cases. Still another class of children will be found to be suffering from a functional disturbance of the liver and a variety of nervous and dyspeptic symptoms, such as constipation, headaches, and capricious appetites. Attention to the urine of such patients will show frequent passages and probably a pinkish sediment, and a general dietetic, hygienic, and medical treatment for lithæmia as found in adults will effect a cure, *lycopodium*, *natrum sulphuricum*, and *lithium carbonicum* being the chief homœopathic remedies therefor.

IV.—ABDOMEN.

A.—**DIARRHŒA.**—This rather general term, meaning simply "to blow through," and implying a functional disturbance of the alvine evacuations, resulting in their unusual frequency and more or less changed consistency, has come to be used for a variety of pathological states. It is employed here as only a convenient heading for all conditions (except cholera infantum, *q. v.*) as distinguished from the opposite state of constipation.

It is not possible clinically to classify intestinal affections as simply as those of the stomach, viz., functional, acute, or chronic catarrh, ulceration, etc.,

since new elements enter into this part of the alimentary canal in the shape of bacteria, and the pathology is confused by the length of the canal and the varieties of structures and functions involved. It often happens that catarrhal inflammation of the stomach extends on into the intestines, but, as Donkin says, it is always well in considering intestinal troubles in which diarrhœa is a prominent symptom to leave "catarrh" out of the conception and think of the functions of digestion and absorption.

The normal stool of infancy is soft, papescent, of light-yellow color, devoid of fetor and of homogeneous character, taking on deeper color and more consistency as life advances. The variations from this standard are legion, and of differing clinical significance. The presence of mucus in a stool may mean simply irritation from worms or teething, but more commonly, especially when viscid or bloody, some inflammatory affection. Bright blood commonly comes from the colon, that from the upper intestine being generally brown. Bloody stools in children are not necessarily or usually the result of ulceration, but rather of intense intestinal congestion. Lienteric stools signify an extreme irritability of the alimentary canal, which may precede, accompany, or follow inflammation, being seldom, as in adults, a purely nervous phenomenon.

Diarrhœa is one of the commonest symptoms of infancy, and is often a salutary effort of Nature requiring no treatment but to be let alone. However, when serious enough to involve pathological changes, it has received various classifications. Some divide

the various diarrhœal diseases according to their anatomical location, which would be ideal if practically it did not usually require a *post-mortem* examination to confirm or disprove the diagnosis; others, from the nature of the discharges, into mucous, bilious, or serous, which would be decidedly practical if one and the same attack did not often involve all three varieties of stools. The generally adopted plan is the following, given in brief:

1. **NON-INFLAMMATORY DIARRHŒA.**—Simple infantile, or non-inflammatory diarrhœa (muco-enteritis, catarrhal enteritis), is characterized by thin watery stools, without tenesmus or appreciable elevation of temperature, and unattended by any tissue change other than tumefaction of the intestinal follicles and diminished firmness of the mucous membrane. Modern authors are gradually discarding the older classification of Niemeyer, of all diarrhœas as catarrhal, and indeed rarely attribute any marked diarrhœa to cold alone.

Causes.—Anything in the alimentary canal not assimilable, anything capable of checking the skin functions and thus congesting the mucous membrane, and anything decidedly disturbing to the circulation, may be the cause; therefore, farinaceous food or a mixed diet begun too early, insufficient clothing in a changeable climate, extreme heat, or dentition, or, as most often happens, a combination of these, are a few of the most important etiological factors "whose name is legion."

Symptomatology.—Symptoms of indigestion may precede the attack a day or two, or the onset be sud-

den, even with nausea and vomiting, although the latter conditions are commonly held to mean an inflammatory attack. The tongue is moist and there is but little thirst unless the stools are very frequent. These stools are thin, watery, of changed (generally greenish) color, not fetid; they may contain some mucus, and vary from three or four to twenty or more in each twenty-four hours. The emaciation accompanying this form is often amazing, and constitutes with its exhaustion the only danger, especially in very young infants.

Treatment.—The use of *belladonna*, *chamomilla*, *croton tiglium*, or *podophyllin*, is generally all sufficient, and vastly superior to the routine treatment with *castor oil* and astringents. Such cases are not to be held as cured until the stools become normal, even the loose discharges have ceased.

2. **ENTERO-COLITIS,** inflammatory or febrile diarrhœa, "summer diarrhœa," are the accepted terms for diarrhœal attacks attended with fever and other symptoms of intestinal inflammation, and include the "dysenteric diarrhœa" and the dysentery of childhood; and may be either acute or chronic.

It is clinically well nigh impossible to make anatomical distinctions as to the exact location of the lesions in this complaint, but this much is of value: Stools from the small intestine are accompanied with colicky pain and are fecal, yellow, and flocculent, while those from the colon or below are more mucous, grayish, and granular, and accompanied by more straining. The lesions include locally acute desquamative catarrh with loss of epithelium, acute inflammation of

the lymph nodules and (follicular) ulceration, croupous inflammation, with colliquitive injection of the adjacent peritoneum, enlargement of the mesenteric glands, and perhaps catarrhal inflammation of the mucous membrane of the stomach.

Causes.—The causation of entero-colitis includes all mentioned under the last caption and much more. For instance, simple residence in large cities—and especially is this true of American cities—as contrasted with the country, even without the bad hygiene and overcrowding that enter into most cases; such constitutional inheritance as syphilis, rickets, and tuberculosis, and the advent of pneumonia, measles, whooping-cough; bottle-fed as contrasted with nursing infants (ninety-seven to three per cent of deaths); the telluric and atmospheric influences of June, July, and August, the disease being comparatively rare in winter, etc. The fact that it occurs most commonly from the sixth to the eighteenth month should make dentition a more potent factor than many authors admit.

Stools.—The character of the stools vary greatly in entero-colitis. They may be at first only thinner and more frequent, as in simple diarrhœa, and of varying color, but soon take on a very offensive odor, and contain mucus, undigested food, especially caseine, still later blood and pus. In protracted cases the acidity of the frequent stools causes an excoriation of the nates and thighs. The tongue changes from a condition of moisture to one of dryness and has a more decided coating; the lips crack and bleed. The continued fever is accompanied by prostration, and

the more serious symptoms gradually creep on. Any variety of sore mouth may be present, but thrush is most common.

Prognosis.—While this disease is always serious, it is not necessarily fatal, although protracted for weeks. If the stools—which should always be carefully inspected in all infantile complaints—show by their constant green color, mucus, and occasional blood that follicular inflammation is probable, the outlook is bad. There is constant danger of infectious diarrhœa, or cholera infantum, and of brain complication because of extreme exhaustion. Serous effusion into the brain is impending if there is stupor, restlessness and a return of the vomiting.

Treatment.—The first necessity in treatment is a change of environment, even those from sanitary homes being immediately improved by removal to the country or sea-shore. At least a public park or square can be found, or some cool spot for the heat of the day. The child should not be handled any more than is absolutely necessary, and be put into a cool, clean bed for its naps and at night. The clothing should be clean and cool, with flannel next to the bowels, and the child be sponged and gently dried each day. These common-place directions are emphasized here because they are all-important in the management of this disease. The intense thirst may be allayed with cracked ice, and water freely used, best boiled or distilled.

It is often necessary to stop milk in any form in infants, and substitute barley, rice, or toast water, and if the case be tedious, delicately made mutton broth.

White of eggs in water often supplies the necessary albumen. *Koumiss* answers in some cases, as do occasionally one of the patent milk foods. If milk can be used it should always be sterilized and peptonized.

Irrigation of the bowels can do no harm and probably has good mechanical effect to cleanse and soothe and probably act as an astringent to the congested mucous membrane. Either a two part solution of *boric acid*, or a ten to fifteen per cent of *hamamelis* when the stools are bloody, can be given to the amount of a gallon through a large flexible catheter or rubber rectal tube. But Demme, Donkin, and others agree that such mechanical treatment when employed as an antiseptic is far from satisfactory. Irrigation is still on trial, its theoretical promise being much greater than its practical performance. Moist and hot applications may afford at least temporary relief and comfort to the little patient, although they are of little use in allaying inflammation unless persisted in with religious exactness.

The selection of the remedy for entero-colitis is a very delicate task, and involves a close study of the history, constitution, and general symptoms, as well as the character of the stools. *Arsenic*, *æthusa*, *podophyllin*, and *sulphur* are often indicated, while *ipecacuanha*, *mercurius solubis* and *corrosivus*, *rhus*, and *iris* more often suit the dysenteric forms.

3. **DIARRHŒA OF BACTERIAL ORIGIN.**—Dr. L. Emmett Holt, whose article (Keating, vol. III) on the diarrhœal diseases is probably one of the best in our language, makes another class called acute mycotic diarrhœas, or those of bacteriological origin, and

therefore infectious, in which class he would place those treated as "summer complaint" (applicable to many acute gastro-intestinal catarrhs) and cholera infantum (*q. v.*). His views are quite generally accepted. Researches in the intestinal bacteriology of children (see Dr. Booker's article in same volume of Keating) have disclosed two constant and normal bacteria in the intestine, viz., bacterium lactis ærogenes and bacterium coli commune, and also in the dejecta of infants suffering from summer diarrhœa some forty more or less constant varieties. The relation of these two classes as preventative or causative of disease is not yet by any means determined. The first class, the two normal bacteria of the intestinal canal, seem innocuous and possibly also act as scavengers upon the forty foreign or possibly pathogenic bacteria. Experiments do not consistently show that the latter possess as a class pathogenic properties, and conclusions thus far apparently demonstrate that many kinds of different bacteria manifest their action by altering the food and the intestinal contents and thus producing injurious products, rather than by the direct irritation of the mucous membrane. Until the bacteriologists reach more definite results the practical deductions are (1) that micro-organisms play a far more important part on food contamination in infancy than in adult life; (2) that careful sterilization and preparation of infant food is a necessity; and (3) that local and antiseptic treatment of diarrhœal diseases, while ideal from this standpoint, is not yet of established practical value.

B.—**CONSTIPATION.**—This is a relative term ap-

plied to inactivity of the bowels, whereby the usual evacuation of fecal matter is postponed from twenty-four hours in the infant to a much longer period in later life. The most frequent cause of constipation in infancy is lack of fluid, not the fluid in the food, which is in large proportion, but water, which the baby often needs instead of food, and was evidently intended by Nature to be freely used at all ages. Other causes are feeble expulsive powers, a dried condition of the fecal mass from too little mucous secretion of the intestinal mucous membrane, too much starch or caseine in the food, fissure, and other ailments at the anus; the continued use of purgatives, which will fix the constipated habit at any age; the mother's constipation reflected in the nursing infant; and, finally, the slowing up of the whole machinery of alimentation in all cerebro-spinal diseases. In older children, more in girls than boys, indigestion, improper food, diseases of the stomach and liver, syphilis, malaria, etc., are common causes.

Symptomatology.—In infants this condition is frequently accompanied with colic, pallor, flushed face, hot head, and temporarily high temperature; while in older children, furred tongue, offensive breath, headache, colic, bad sleep, and moroseness are its concomitants.

Treatment.—It is well to always make a physical examination of all cases reported as constipation or diarrhœa before instituting treatment, and is generally wise, in the former instance, to thoroughly examine the rectum. Acute constipation never requires a purgative, but may be wisely and safely neglected

for a while (Donkin), an enema of hot soap suds or glycerine and water (one-half each), or glycerine or wheat gluten suppositories, or even the time-honored cone of soap, being indicated if Nature does not act within a few days. Regularity in the action of the bowels should be inculcated very early in life, for much constipation at any age is due to downright carelessness. In bottle-babies, well cooked and strained oatmeal gruel may be substituted for the water in diluting the milk, with excellent results; or massage of the abdomen carefully resorted to. An exclusive diet of cow's milk almost always results in constipation, and must be cured by substitution of some aid to the digestion of the caseine. Then the use of some dextrinized and malted food, as *Mellin's Food*, is indicated, or a teaspoonful of a good malt extract to the bottle of milk. In older children the addition of baked apples or stewed fruit to their dietary, and a careful regulation of the same generally cures. Merely purgative drugs are condemned, certainly by all homœopathic authorities and by the best of all schools, as but temporary stimulants to be used only in smallest doses, and as seldom as possible. *Nux*, *sulphur*, *bryonia*, *alumina*, *nitric acid*, etc., make such expedients as the latter unnecessary to the homœopathist.

INTESTINAL PARASITES.—The animal parasites which disturb childhood are of but few varieties and, contrary to popular belief, comparatively rare. They commonly enter the child's system as an embryo or egg derived from the domestic animals, either through uncooked flesh, from raw fruits and vegetables that

have been fertilized by liquid manure, unfiltered water, or self-infection from uncleanliness. There must be, as the older writers believed, a basis or soil upon which these parasites flourish, since they attack comparatively few of the hundreds exposed to the above causes. As confirming the idea that something in the condition of the alimentary canal favors these visitors, as an acid condition of the mouth does thrush, a recent English authority is quoted (Arch. of Ped., 1895, p. 243) as advocating, not anthelmintics, but an exact application of a proper diet as the best prevention. Probably a proper state of resistance, *i. e.*, thorough nourishment or good health, is incompatible with the existence of parasites. In the order of their clinical frequency the following are the varieties that most often affect children:

1. **Oxyuris vermiculosis,** the seat, thread, or pin-worm, is the most minute and common parasite especially of infancy and early childhood. It is whitish or semi-transparent, varies in length from one to five lines, and is thought to have its home in the rectum and sigmoid flexure. These worms propagate with great rapidity, and cause by their migrations about the anus and genitals the most intolerable itching, and sometimes a mucous or even bloody diarrhœa, and prolapsis ani. Frequent micturition, excitement of the genitals in older children, and leucorrhœa may also arise from these worms, and, according to some authors, convulsions.

Diagnosis.—The readiest means of diagnosing the presence of these worms is by inspection of the anus under a bright light shortly after the child has gone

to bed for the night, but it must be done very quickly, else these wanderers will have sought their warm quarters and leave no visible trace.

Treatment.—Common salt water injections or fresh garlic infusions given for a night or two at bed-time, is generally radical treatment, but the physician himself may have to administer in some cases an enema of *bichloride of mercury* (one grain to four ounces of water) and follow it in a few minutes with an injection of plain cold water.

2. **Ascaris lumbricoides,** the round or stomach worm, is somewhat longer than the common angle worm; *i. e.*, four to twelve inches, whiter in color, and more tapering at its extremities. Its ova are quite indestructible and may remain dormant a long time, probably until conditions favorable to its life are found in some human or other animal, being quite partial to the small intestine of children from three to ten years old. Its migrations into the large intestine, out through the anus, or up into the hepatic ducts, stomach, or œsophagus, are its most troublesome and even dangerous habits, for in rare cases it has perforated the intestine and been found in the cavity of the abdomen in large numbers. While the females of this species are exceedingly prolific, each individual containing millions of eggs, the numbers of mature worms in each individual patient may not necessarily exceed a half dozen in order to produce marked symptoms. Convulsions and "worm fevers" simulating gastritis are not uncommon results of their irritation in the intestines and stomach, but the many nervous conditions, such as picking the nose,

choreic movements, night-mare, and the colicky pains, diarrhœa, feeble appetite, milky urine, etc., attributed to worms are by no means diagnostic of anything but impaired digestion, which may or may not be associated with worms. The presence of worms or their ova (as seen under the microscope) in the evacuations or about the anus are the only true signs of these or any other variety of parasites.

Treatment. — *Santonine*, the active crystalline principle of *artemisia santonica*, *cina*, or German *wormseed*, is the most efficient remedy for these lumbricoid worms. It may be given at bedtime in from one to three grains in powder, lozenges, or spread on bread and butter, and followed by *castor oil* or some other efficient laxative in the morning; but as nearly all authorities record some occasional poisoning symptoms from such doses, the exhibition of our first or second decimal trituration three or four times a day for three or four days is safer and just as efficient. Prof. Demme prefers to administer *santonine* in a slightly oleaginous solution, one-half grain to one ounce of *olive oil*, and needs no laxative thereafter. The writer obtains thorough results from a large powder of the 1x at night and the use of *cina* 30 every two hours through the day for a few days, such treatment bringing the worms and allaying all reflex symptoms in the meantime. Without this dynamic treatment of such cases, followed by proper food, a delicate child is left weaker and worse off for the time being than when suffering from worms.

It should be remembered that the comparatively rare tubercular peritonitis has been treated in its earlier stages as "only stomach worms."

3. **Trichocephalus dispar,** or so-called whip worm from its shape, is an occasional inhabitant of the cœcum or ilium, and of little clinical importance because of its rarity in childhood and lack of peculiar symptoms. *Santonine* is probably the most efficient vermifuge for this variety.

4. **Tape Worms.** — These parasites are never found in nurslings and rarely in children. The tape worm, of which there are several varieties, is an hermaphrodite, each segment containing the two sexual organs, and develops from a small head or scolex about the size of a pin head, segment after segment by a sort of budding process, the segments growing larger and more matured as they become further removed from the head, the whole worm attaining a length varying from twelve to twenty-four feet. The two common varieties in this country are the tænia solium, or pork tape worm, and the tænia saginata, or medio-canellata, or beef tape worm. The tænia solium, so-called because nearly always found alone, has a circlet of hooklets about its head to distinguish it from the other tænia, and is longer with thinner and more slender segments. These segments in the stools or at the anus are the usual evidences of the residence of the parasites, and their breaking off even in long sections by no means interferes with its life. The head must be secured by the treatment, else two or three months time will bring down more segments as evidence that the parasite still lives and the treatment must be gone over again.

Treatment.—Almost all tænicides are necessarily poisonous and irritating, and are therefore to be used

with care, especially in children. Among them are the following: *Male fern* (*filix mas*), ½ drachm of the *ethereal extract*, the *tannate and sulphate of pelletierin*, the active principle of the *pomegranate; kousso*, 1 to 2 drachms of the powder; *kamala*, in 1 to 2 drachms in a *gum arabic* solution, may be repeated several times and requires no purgative to follow; an emulsion of *pumpkin seeds* (2 ounces of seeds rubbed up in a pint of water, strained, and 10 to 15 minims of *sulphuric ether* added), causes no unpleasant or injurious effects. With all these remedies a low diet of light liquid food should precede for a few days, and an active purgative, as *castor oil*, follow after a few hours to expel the dead parasite, except with *kamala* and *pumpkin seeds*, which are of themselves sufficiently purgative. The destruction and expulsion of intestinal parasites is a purely mechanical process, outside of homœopathic therapeutics, but many of our remedies such as *cina*, *spigelia*, *ignatia*, *sulphur*, etc., give relief to the symptoms of irritation present before and after the removal of the unwelcome guests. (See Tooker, pp. 216, 217.)

CHAPTER VIII.

DISEASES OF THE URINARY ORGANS.

BY ALFRED P. HANCHETT, M. D., COUNCIL BLUFFS, IOWA.

In presenting the present status of diseases of the urinary organs in children I have culled from several recent works upon this subject; also from the journals and fragmentary writings of the past twelve months whatever is of special value or interest, including with the little that is new much, of course, that is old. For the sake of brevity, and also because practically the whole paper is a series of selected extracts, I omit all reference to special authorities. The space at my disposal permits but the briefest *resumé* of the more important diseases of the urinary organs; if, therefore, some subjects are altogether omitted that properly belong here, or if questions and considerations of importance seem to have been slighted, kindly remember a ten-page article cannot possibly do full justice to a topic which is often treated upon in a volume of a thousand pages.

THE URINE.—Quantity.—The average quantity of urine passed in twenty-four hours by infants during the first ten days of life varies from four to ten ounces. It increases rapidly during this period, but more slowly during the remainder of the first

month, at the end of which time it is from six to twelve ounces, and by the end of the first year it is ten to fourteen ounces. During the first seven years of child life a fair average quantity is one fluid ounce for each pound of the child's weight. If it varies greatly and persistently from the above, it is because the child is sick, or improperly fed, and the cause should be determined.

To collect the urine of young children accurately, secure two fair sized sponges, cleanse thoroughly, and after drying, weigh. Place one over the genital organs and secure with napkin. When wet remove and weigh, and place the dry one as before. Thus alternately weighing and changing for twenty-four hours gives the quantity, and as much as is needed for examination can be expressed from the sponges.

Character.—The urine of very young children is generally clear and watery, though if first micturition is delayed it will be slightly yellow, or if the infant becomes jaundiced, the bile escaping in the urine gives it a darker color. The odor will be only slightly urinous.

The specific gravity at birth is light, varying from 1.002 to 1.010, and not often more than 1.012 during childhood. Its reaction should be neutral, or, if retained longer than usual, feebly acid. The healthy infant will void about one and three-fourth grains urea to the pound of its weight every twenty-four hours.

Albuminuria.—The presence of albumin in the urine will indicate one of the following conditions:

1. Functional albuminuria, or cause unknown.

2. Some febrile condition.
3. The presence of blood, pus, chyle, or bile.
4. Pressure on renal vessels, as tumor, etc.
5. Nephritis.
6. Complicating epilepsy, or other convulsions.
7. Poisoning, as cantharides, or turpentine.

FUNCTIONAL DISEASES OF THE BLADDER.— The progress made in the study of nervous diseases, especially in the school of Charcot, has had the effect to direct more attention to the intimate relation existing between the nervous system and many vesical disorders, both with and without recognizable lesions of the spinal cord. The following classification is nearly the same as that given by M. Tuffier of functional troubles of the bladder dependent upon some defect in the innervation of that organ :

1. **Due to actual structural diseases of the nervous system.** — Under this head would come ataxia, lesions of the spinal cord and brain, localized sclerosis, general paralysis, and insanity. In these conditions there may be motor paralysis without retention; paralysis with partial or complete retention, or incontinence, which may be intermittent, the overflow of an overfilled bladder, or due to an irritable bladder leading to a discharge as soon as the patient makes a move to urinate, or to an urgent tenesmus accompanied by cystalgia.

2. **Disturbances due to epilepsy,** the chief of which is incontinence. It differs from common nocturnal incontinence by occurring at longer intervals, and by the patient waking with a feeling of extreme weakness, exhaustion, and weight in the head.

3. **Connected with congenital malformations;** and (4), those **due to lesions of neighboring organs,** often described as the irritable bladder. The malformations may be contracted external urinary meatus, narrow adherent or elongated foreskin, adherent hood to elitoris, and lesions of neighboring organs might be fissure of the anus, hemorrhoids, or operations on the rectum.

5. **Due to lesions of the bladder,** as vesical calculi or tumor, and fissure in the female urethra, producing vesical tenesmus.

6. **Due to the condition of the urine,** as the large quantity of limpid urine in the hysterical patient, the excessive quantities of saccharine urine and its frequent accompanying pruritus of the diabetic patient, the excess of urates in the gouty, the phosphatic urine of the neurotic, and the extremely acid urine so irritable to the bladder.

7. **Idiopathic functional disturbances of the bladder** attended by cystalgia and spasms of the vesical muscular tissue and the urethral sphincter.

8. **Vesical troubles of mental origin.** The enormous influence of the mind over the functions of the bladder is proverbial. The remarkable experiences of Mosso and Pellacane have proved that every thought, every emotion, as well as every sensory excitation, determines an immediate contraction of the vesical muscular tissue; and Janet has shown that if the thoughts have reference to micturition, the consequent contraction of the bladder is the more intense. They are powerful excito-reflexes of the nerves of the bladder.

The cause of these psychological troubles is an over-anxiety about micturition, which may exist quite independently of the least physical basis, or may have as its foundation some slight but real urethro-vesical trouble. As a result of this mental condition the bladder becomes irritable, micturition is frequent, and there is an abnormal amount of urine secreted. That the polyuria, as well as the frequency of micturition, is due to mental influence is proven by the fact that if the mind is engaged and interested both cease as they do during sleep. The patient may pass water fifty times a day yet sleep all through the night. A greatly increased capacity of the bladder is proven to exist by injections of warm water, and yet the catheter left in the bladder as a drain tube does not remove the desire to pass water. When this goes on to an extreme the polyuria occurs at night, and they either sleep lightly, rising often to pass urine, or sleep soundly, passing the urine in bed. This is one of the varieties probably most common of nocturnal incontinence in children. This form of incontinence is not diurnal, for no matter how frequent the desire to urinate there will be no loss of control. Diurnal incontinence is not due to psychological causes, but trouble of a different nature.

Another form of functional disturbance from mental causes is urethral spasm, manifested during micturition. This is that condition so happily described by Paget as "stammering of the bladder," which renders the person incapable of micturating in the presence of others; or the inability to start the flow without the mental stimulus of some such sound as that of running water.

ENURESIS.—Enuresis is the disorder in the urinary tract, regarding which every physician is most frequently consulted. It is but a symptom, however, the causes of which are many. It is often dependent upon a persistent infantile weakness in the neck of the bladder or sphincter muscle, or it may be caused by reflex irritability of the bladder or any of the pelvic organs. Among the causes of reflex irritability may be noted fissure of the neck of the bladder, vesical calculus or tumor, and the irritating nature of the urine, as increasedly acid or alkaline; rectal irritation, as fissure, eczema, or pin worms; hyperæsthetic condition of the sexual organs dependent on stricture, constricted or adherent foreskin, or adherent hood of the clitoris, or the psychical effect of dreams. Masturbation, by increasing the sensitiveness of the prostatic portion of the neck of the bladder, may result in enuresis.

Children suffering from nocturnal enuresis only, who have complete control of the urinary functions during the day, are in a majority of cases victims of the psychical form of this disorder. It is clear in such cases that the bladder is in a healthy state and will retain a normal amount of urine, for, as it fills and produces the usual pressure, instead of waking the child, it induces a dream which is influenced by a dominating fear that an accident will happen. He will dream of rain, or running water, or that he is in some suitable place for passing urine, and will only awaken to find himself saturated. This form of trouble can often be corrected by suitable remedies, but it is sure to disappear at puberty, the sexual de-

velopment changing the psychological condition. A class of cases in boys recover with the development of the prostate at puberty.

If periodicity of incontinence is a marked feature, then it is apt to be neurotic in origin. It may accompany and be occasioned by nocturnal epilepsy, or night terrors.

Diurnal incontinence, I believe, is generally due to insufficiency of the sphincter muscle, permitting a few drops of urine to enter the upper part of the urethra; this being followed by more and more keeps up a continuous dribbling. The parts being in a partially anæsthetic condition, the child is scarcely conscious of its escape. It is often found in children who are bright and overactive, though occasionally occurring in the dull and stupid.

The treatment must first be directed to the reflex trouble, if such be found to exist. Examine carefully for any orificial irritation, and correct whatever is found. Collect the urine and learn the exact amount secreted in twenty-four hours. Test carefully as to excessive acidity or alkalinity; also for albumin and sugar; examine for uric acid crystals, also calcic oxalate, and if any of them are found, select a diet to aid in eliminating the abnormal property. In most of this class of troubles it is well to largely avoid sweet and starchy food, and to use meat sparingly, but green vegetables, eggs, milk, poultry, and fish may be used freely. In the line of remedial treatment, almost any remedy in the materia medica may be indicated in cases dependent upon some dyscrasia or constitutional peculiarity.

Aconite is indicated in cases of neurotic origin. Patient excitable, frightened, awakes in state of terror, restless and nervous, with some fever.

Belladonna or *gelsemium* will often be helpful in cases dependent on insufficiency of the sphincter, unconscious continual escape, day and night alike; or worse during the day often.

Cina, *santonine*, or *spigelia* will be useful when the trouble is caused by pin worms.

When an irritable bladder is the principal trouble, urination frequent but under the child's control through the day, but involuntary at night, the child complaining of discomfort or pain upon urinating, study *cantharis*, *chimaphila*, *causticum apis*, and *arsenicum album.*

When the urine is dark and offensive, containing uric acid or calcic oxalate crystals, is chiefly troublesome afternoons and at night, think of *benzoic acid*, *lithum carbonicum*, *lycopodium*, *sepia*, or *mercury.*

If the child is illy nourished, puny, frequently ill with numerous minor ailments, especially if a child of scrofulous parents, study *sulphur* or *psorinum*,—give a few doses of the one best indicated and await the outcome. I have seen amazing results.

LITHEMIA.—This is often known as the uric acid diathesis. In children it is frequently the result of prolonged illness. Just where or how the uric acid is produced is not known.

The symptoms of lithemia in children are of two classes: Those due to the presence of uric acid in the system, and those due to its excretion from the system. When there is an excess of uric acid in the

system, the little patient is apt to be precocious, nervous, restless, excitable,—one extreme or the other. Wakeful at night; talks in his sleep; dainty eater; craves indigestible food; very sensitive to cold or dampness. Perspires too freely; has damp cold hands and feet; irritation of the larynx, pharynx, or tonsils. Tendency to catarrh of the stomach and bowels, and to enlargement of the liver and spleen.

With the excretion of uric acid the symptoms are very different. Pain is pre-eminent. Renal colic may be mistaken for stomach-ache. The pain will be intermittent, and may be located anywhere in the urinary tract. The paroxysms will be very sharp, and may be attended by hematuria, shivering, nausea, and vomiting. These patients are apt to drink water immoderately and sweat profusely, reducing the quantity of urine secreted and leaving it overloaded with the solids. The urine may be clear when passed, but soon becomes cloudy or covered with a film or pellicle; or after standing a few hours, a sedimentary deposit of free uric acid will give the characteristic brick dust stain in the vessel.

Treatment.—In the treatment of lithemia the diet and hygienic care of the patient are of the greatest importance. Sweets and starchy foods should be used moderately; but little meat is to be taken; fresh fruits, green vegetables, milk, eggs, fish, and poultry may be taken freely. Exercise should be taken regularly, avoiding too great violence; cold baths are good taken upon rising in the morning, followed by vigorous rubbing; plenty of sleep, and water freely at meal time. Special stress is placed upon the im-

portance of these children getting plenty of sleep, as it seems to be the best antidote to the uric acid poison known. The leading remedies are *lycopodium*, *berberis*, *lithium carbonicum*, *calcarea carbonica*, *nux vomica*, *sepia*, *benzoic acid*, *aluminum*, *sulphur*, and *psorinum*.

RENAL CALCULI.—Another disorder frequently met with in children is gravel, or renal calculi. There are three different classes of vesical calculi: Uric acid and its combinations, phosphoric acid and its combinations, and the oxalate of lime. The uric acid and urates constitute about three-fifths of the cases. The usual symptoms of stone in young children are prolapsus ani, priapism, bloody urine, sudden stoppage in the flow of urine, brown or red sandy sediment. The pain varies in its situation and character, but is often an aching behind the symphysis, in the perineum, or along the ureters to the end of the penis; aggravated by exercise, and at the end of micturition relieved by lying down. To determine absolutely the presence or absence of stone in the bladder, nothing is equal to the steel sound.

Sir Henry Thompson's records show that of 1,827 cases of lithotomy in England, over fifty per cent were in children under thirteen years of age. He also noted that the great majority of the cases in children were from the poorer homes, rarely meeting a case among the children of the better classes.

The treatment consists in the use of large quantities of water, the lithia waters being recommended by many writers, frequent warm baths, non-nitrogenous diet, and the use of some alkali, as *sodium phos-*

phate, or the *benzoates*, in small but material doses; or if the stone has attained much size, some surgical measure for its removal will be necessary.

ACUTE NEPHRITIS.—Acute inflammation of the kidneys is generally a secondary trouble, following scarlet fever, diphtheria, typhoid fever, or almost any of the acute diseases. Some poisions have been known to cause it, as *mercury* and *turpentine*, and it occasionally results from exposure to cold.

Symptomatology.—The first symptoms in post-scarlatinal nephritis are generally seen from the fourteenth to the twenty-first day after the onset of the primary disease, and when desquamation is well advanced, the temperature having become normal, or nearly so. There will be a little return of fever, headache, pallor, malaise, and possibly convulsions. A slight puffiness below the eyes and about the ankles will soon be noticeable, and the secretion of urine diminished. Œdema will increase rapidly, general anasarca, great dulness, even stupor, difficult breathing, and a tormenting spasmodic cough will soon follow. The urine will now be loaded with albumin, and of a light specific gravity. The heart's action will be labored and often irregular.

Acute primary nephritis in children may easily be overlooked in the early stage; it is therefore important to examine the urine in every obscure case, especially so if there be continuous rise of temperature not clearly accounted for.

The prognosis in acute nephritis is reasonably favorable if discovered early, but it will require the closest attention and careful nursing. Favorable

symptoms are increased flow of urine, decrease in albumin, improved heart action, slower and deeper respiration.

Treatment.—A milk diet in scarlet fever and the avoidance of all exercise or exposure until after the third week will generally prevent this and all other *sequelæ* so much to be dreaded. If, however, albuminuria is present, the child should be put to bed in blankets; he should have frequent hot sponge baths, followed by vigorous rubbings, and the temperature of the room should be carefully kept at 70 to 75 degrees F. The diet should be light but nutritious; milk, gruels, rice, arrow root, etc.

The remedies commonly found helpful are *mercurius corrosivus*, *terebinthina*, *apis*, *arsencium album*, *cantharis*, *ferrum phosphoricum*, and *digitalis*, though any remedy that is indicated by the symptoms of that particular case will be curative.

DIABETES MELLITUS.—Diabetes mellitus is occasionally met with in children, yet so rare is it that four writers whose reported cases collectively number 1,838, in patients of all ages, report but six in children under eight, and but nineteen in those under twenty years of age. The question of its pathology is yet unsettled, but I believe it will ultimately be proven to be due to a suppression of some other and more superficial disease by excessive drugging, and that when this is more fully understood, and treatment employed that will meet this condition we shall have more reports of cured cases. The chief characteristic symptoms are glycosuria, polyuria, polydipsia, and bulimia.

Complications often appear in diabetic patients with little warning, and may be coma, albuminuria, phlegmonous, and gangrenous inflammations, pruritus, eczema, cystitis, disturbed vision, and various other disorders.

The prognosis should be guarded, as a large percentage of the cases are fatal, and it runs a more rapid course in children generally than in adults.

Treatment.—Many authorities recommend highly what is styled the diabetic diet, others do not adhere so closely to it, and after considerable observation of cases treated both ways I am inclined to allow nearly the usual diet, eliminating only the excessive use of sweets.

DIABETES INSIPIDUS.—This is similar to diabetes mellitus, in the quantity of urine, excessive thirst and appetite, and emaciation, but the urine is of light specific gravity and free from sugar. This disease is common in childhood.

Etiology.—Many causes are assigned, which may be taken to indicate that the etiology is not understood. The same may be said of its pathology. The kidneys are sometimes found diseased, but oftener normal.

Symptomatology.—The quantity of urine is sometimes enormous, as much as thirty pints in twenty-four hours, though from ten to fifteen is about an average. The specific gravity may be from 1.002 to 1.010. The course of the disease is very uncertain, some patients living for years in comparative comfort, and dying of some other trouble, diabetes insipidus rarely proving fatal of itself.

Treatment.—In the treatment of these cases look well after the general health. Nutritious food, frequent baths, moderate but regular exercise, and the remedy covering the prominent and peculiar symptoms of the case in hand will generally cure. Remedies to be considered are *arsenicum album*, *apis*, *apocynum*, *helonias*, *ferrum*, *nux vomica*, *ignatia*, *psorinum*, *silicea*, and *sulphur*.

CHAPTER IX.

SKIN DISEASES.

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ERYTHEMA.—Erythema is a hyperæmia of the skin, varying from a simple congestion to an acute inflammation. It consists of irregular, superficial red patches accompanied by smarting, tingling, and mild fever. Two types obtain: Erythema hyperæmicum, a simple congestion, and erythema exudativum, distinguished by a perceptible exudate.

Erythema simplex is the result of chafing and of either cold or heat or of some external irritant. It is mild in form, without constitutional symptoms. No treatment is needed beyond removal of the exciting cause and the application of some soothing lotion, followed by dusting with *lycopodium* powder.

Erythema intertrigo is a form of erythema often seen in fat children in folds of skin about the neck and joints. It is due to the heat and secretions retained in the creases of the skin, and occurs especially in the heat of summer. Cleanliness and separation of approximating surfaces is usually sufficient to effect a prompt cure.

Erythema perino, or commonly called chilblain, results from exposure to cold and wet, and then suddenly heating the affected parts, usually the feet and hands. The parts thus subjected to the sudden extremes of temperature become shining red, swollen, itch and burn severely. In chronic cases they assume a bluish tint, and sometimes suppurate.

Treatment.—Topical application of *calendula* cerate and lotions of *agaricus* and *pulsatilla* are recommended. Remedies useful are *agaricus*, *belladonna*, *petroleum*, *pulsatilla*, *rhus toxicodendron.*

Erythema fuga is a fleeting form occurring mostly in children from digestive disturbances and manifests itself most frequently on the face.

Erythema neonatorum affects the new-born infants during the first few days of its existence. It is due to irritation of the sensitive skin. It is characterized by minute red papules over the congested surface, usually the breast and neck, and fades in a short time. The protection of the skin by mild lotions and the avoidance of all irritation is the only treatment needed.

Erythema multiforme is usually preceded by some systemic disturbances and mild fever with gastric irritation. Some authors maintain that the cutaneous eruption is preceded by erythema of the pharynx and larynx. The backs of the hands and feet are first affected, and it gradually involves the trunk and limbs, fading and reappearing again. It is not so frequently seen in children, but when thus occurring it may develop in severe form and the vesicles may become purulent and leave cicatrices. The

disease usually lasts from a fortnight to a month, but may not cease for many months. During the eruption there is some burning and itching.

Remedies are *belladonna*, *bryonia*, *mercurius solubilis*, *nux vomica*, *pulsatilla*, *ustilago*, *æthusa*, *chloral hydrate*, *chelidonium majus*.

Erythema nodosum should properly be regarded as a variety of erythema multiforme, and often occurs simultaneously. It frequently affects children and appears as round or oval swellings from the size of a filbert to a walnut on the anterior part of the legs. They vary in number from one to a dozen, are usually quite painful, and when oval in form their long axis is vertical. It is preceded by rheumatic and tibial pains and is due to mal-nutrition. This form usually appears in crops lasting from two to three weeks.

Treatment.—Topical application of *hamamelis* is usually helpful. Kippax recommends *rhus venenata* and *arnica*, *ptelea*, and *trifolium*.

ROSEOLA.—(Syn. Rose Rash; False Measles.)—This cutaneous affection occurs usually in children and almost always is secondary to some other disorder, usually gastric or constitutional, or occasioned by the heat of summer. Its favorite spot of appearance is the chest, but it may affect the whole body. It is slightly contagious, sometimes occurring as an epidemic, and is distinguished by an eruption somewhat resembling measles. It consists in an efflorescence of red patches, coalescing, and accompanied by a temperature varying from 102 to 104 degrees F. As in measles, the temperature falls with the appearance of

the eruption. It lacks the catarrhal symptoms of measles and the strawberry tongue of scarlet fever. After three or four days the eruption subsides and there is sometimes slight desquamation. Little treatment is demanded beyond attention to diet and clothing.

Remedies are *aconite*, *belladonna*, *pulsatilla*.

URTICARIA.—(Syn. NETTLES—RASH—HIVES.)—Urticaria constitutes, according to Kippax, about ten per cent of all skin affections. Persons having idiosyncrasies to certain articles of diet are especially liable to this disorder, and attacks are evidenced by the appearance of the wheal. The wheal varies in size from a millet seed to a silver half dollar, is a hard, smooth, flat elevation of the skin, white or pink in color. They are of various forms, discrete, and occur all over the body. They provoke much itching and burning, and usually subside after a few hours or days, but may persist for many years. Usually the wheal is evanescent, comes in drops, and in most cases lasts but for a moment, at most a day. In the chronic form it lasts for months and even years, and exhibits several varieties. According to Jackson, urticaria is due to a vaso-motor disturbance. Serous exudation follows a dilatation of the cutaneous vessels, and forms the wheal. This is at first pink and then white, with a pinkish areola. The wheal is pathognomonic of urticaria, and occurs only in this affection. No trace is left when the eruption vanishes.

Treatment must begin with the correction of all errors in diet and the removal of all exciting causes. Remedies useful are *antimonium crudum*, *chloral hy-*

drate, *apis mellifica*, *arsenicum*, *ledum*, *mezereum*, *urtica*, *rhus toxicodendron*, *sepia*, and *pulsatilla*.

VESICULÆ.— A vesicle is a slight elevation of the epidermis containing a fluid usually clear, though sometimes opaque. They are most frequently globular in form and vary in size from a pin head to a split pea. Three principal types of this affection occur: sudamina, eczema, and herpes.

Sudamina is a disorder affecting children during the heated term. It is occasioned by excessive sweating. Probably the mouths of the sweat ducts become obstructed, the epithelial coat of the skin is lifted, and a clear pearly limpid liquid appears in minute drops beneath. It is not properly a disease *per se*, but results from excessive heat and debility. The indications are prophylactic. Remove excessive clothing and give careful attention to the diet.

Eczema is a non-contagious, inflammatory, cutaneous disease, and constitutes one of the most persistent and distressing affections of childhood. It is either acute or chronic, more frequently the latter. It may first appear as an erythema, vesicle, papule, or pustule, and becoming confluent, exude a clear, sticky, honey-like serum, which dries into crusts and scales. These exfoliate, and leave a reddened surface, from which the exudate speedily reproduces the scales. The different forms of eczema are named according to the forms of the eruption and its location: E. simplex, E. rubrum, E. pustulosum, E. squamosum, E. impetigo. According to Jackson, the following symptoms are characteristic of all forms of eczema, and a majority of them will be present in

every case, viz., redness, itching, inflammation, moisture, crusting, and cracking. The disease usually begins with noticeable systemic disturbance. The patient observes an itching or burning; examination reveals the hyperæmia with papule, vesicle, or pustule, or moisture of the surface.

This affection usually forms patches, which shade off into the healthy tissue. The patches may be small, or nearly the whole surface may be involved. From a point, the affection spreads with more or less rapidity, remaining a few days, or developing into the chronic form. The disease is especially liable to affect children. Out of 5,000 cases tabulated by White in hospital practice, the ratio under ten years of age is as follows:

Within the first year of life	569
Within one and two years of age	286
Between two and three years of age	280
Between three and four years of age	198
Between four and five years of age	144
Between five and six years of age	118
Between six and seven years of age	93
Between seven and eight years of age	76
Between eight and nine years of age	66
Between nine and ten years of age	60

According to Jackson, it constitutes about one-third of all skin diseases. The causes are depraved conditions, constitutional dyscrasiæ, irritation of the trophic nerves, filth, dentition, unsuitable food, clothing, etc. Acute eczema usually shows itself upon the face and hands. When the disease is acute, it usually terminates within a fortnight, or it may become chronic, and continue with varying degrees of intensity for

years. Children are peculiarly liable to this affection, because of the numerous predisposing and exciting causes to which they are subject.

Of the various forms, E. capitas is a variety most frequently affecting children, and warrants especial mention. It occurs on the scalp, and is of the form designated rubrum or impetiginosum. It is liable to creep down upon the forehead and about the ears. It is at first vesicular; the vesicles rupture, and a thick, viscid fluid exudes, forming with the natural secretions of the skin a thick, yellowish, honey-like fluid. It early passes into the pustular form, the exudate mingling with the dust and hair of the head forms a dense matted crust, which may persist for years when wanting proper care and treatment. Bearing in mind the symptoms as enumerated by Jackson, the diagnosis is as a rule quite easily made. Other diseases may be co-incident with eczema, and will need to be differentiated.

Prognosis.— In acute eczema an early recovery can be safely promised. The chronic form may persist for years in spite of the best treatment. In this form it is very intractable.

Treatment.—In its treatment, cleanliness is of prime importance. *Olive oil*, *vaseline*, etc., may be used to soften the crusts and facilitate their removal. Great care must be exercised to prevent injury to the abraded surface. Astringent ointments are of doubtful utility and their use is attended with some danger. The following remedies will be found of advantage: *Arsenic*, *ammonium carbonicum*, *calcarea carbonica*, *antimonium crudum*, *clematis erecta*, *dulcamara*,

graphites, *hepar sulphuris*, *lycopodium*, *mercurius*, *mezereum*, *natrum muriaticum*, *petroleum*, *psorinum*, *rhus toxicodendon*, *staphysagria*, *skookum chuck*, *sulphur*, *tartarus emeticus*, *thuja*, *viola tricolor*.

Herpes is an acute, non-contagious, inflammatory cutaneous disease. It is distinguished by the appearance of one or more clusters of discrete vesicles upon an inflamed base. Some types of this affection are incident to childhood. It may occur alone, or it may be co-incident with other diseases. The vesicles appear singly or in clusters, and usually dry up, leaving a slightly reddened surface. After the crust is exfoliated, the reddened surface beneath soon becomes normal. The onset of the disease is usually mild, or may be preceded by fugitive neuralgic pains. In herpes zoster the most frequent site of the eruption is along the course of a nerve trunk, either on the body or face. In the former position it is usually semilateral, reaching half way around the body. Its symptoms are neuralgic pains, smarting, and tingling. The view generally held by dermatologists is that herpes zoster is due to an inflammation of the sympathetic fibers of the ganglia, through which the nerve trunk passes. In childhood it always occurs in mild form. Suspicion as to its being contagious is sometimes provoked by the occurrence of numbers of cases in schools and crowded tenements.

Remedies to be consulted: *Arsenic*, *rhus toxicodendron*, *bryonia*, *cantharis*, *phosphorus*, *magnesia phosphorica*, *mercurius*, and *mezereum*.

ECTHYMA is distinguished by large, discrete, painful pustules, situated on an inflamed base, covered

with thick brown crusts. When these are exfoliated, they leave temporary scars. The pustules are round or oval and of a yellowish cast, the surrounding tissues being reddened, swollen, and gradually fading into healthy tissue. The purulent contents soon dry into heavy brown scales over an excoriated surface. This disease occurs in scrofula and cachectic children chiefly on the neck, shoulders, and extremities. It is distinguished by the pain, the brownish crust, and the shallow ulcer. Unless it becomes chronic, the disease runs its course in from twelve to twenty days.

Chronic ecthyma, which is the more common form, is simply a persistence of the acute symptoms, and is usually caused from some external irritation of the skin. Foul air, filth, improper food, and depletion from any cause tend to provoke the disease.

Remedies useful: *Arsenic*, *kali carbonicum*, *mercurius*, *rhus toxicodendron*, *antimonium crudum*, *antimonium tartaricum*, and *croton tiglium*.

IMPETIGO is an acute, eruptive, contagious disease. It is characterized by a few or numerous closely agminated discrete vesico-pustules in size from a split pea to a hazel nut. The exudation from these dries and forms a thick, yellowish-brown moist scab, which, according to Kippax, have the appearance of being stuck on. The prodomal stage is brief, showing fever and malaise, shortly followed by the eruption. The tubercles primarily are small, increasing in size and merging, after three or four days, into pustules, surrounded by a reddened areola. A milder form of this disease, impetigo simplex, running about the same course, and characterized by nearly the same

symptoms, is described by some authors. It differs from impetigo contagioso in that it is not contagious, and the symptoms are generally milder, and the disease yields more readily to treatment.

Remedies are *antimonium crudum*, *kali bichromicum*, *calcarea carbonica*, *croton tiglium*, *euphorbium*, *staphysagria*, *viola tricolor*, and *thuja*.

PRURIGO is a rare, chronic, cutaneous affection. It is distinguished by small, hard, whitish papules about the size of a pin's head and is attended with constant itching. It occurs in childhood and simulates papular eczema. When the surface of the papules is broken by vigorous scratching, a bloody serum exudes, which dries in brownish scales. The papules are better detected by touch than by sight, and are usually located on the outer surfaces of the limbs, though all parts of the body may be affected. The constant scratching produces much irritation of the skin, making it rough, cracked, and thickened. The inception of the disease is mild, but becomes more severe until it is a constant annoyance to the patient. As a sequel to the chafing produced by this eruption, urticaria and eczema sometimes follow. The disease usually results from lack of cleanliness and nerve irritation from animal parasites. In acute cases occurring in children the prognosis is hopeful.

The treatment consists in perfect cleanliness and a nutritious diet. Kippax recommends tar and sulphur baths. The tar soap is useful in bathing, and lotions of *mezereum* are recommended by Dickinson.

Remedies most useful: *Arsenic*, *dolichos pruriens*, *carbolic acid*, *mercurius*, *lycopodium*, *sepia*, *hepar sulphuris*, *petroleum*.

PSORIASIS is a chronic, inflammatory cutaneous disease appearing at any period of life. It exhibits slightly raised patches varying from a point to the size of a silver half dollar, and covered with silvery, white, dry scales. It appears usually on the elbows and knees, and constitutes about four and one-half per cent of skin affections. The most diverse views obtain regarding the etiology of psoriasis. Fox says he is "constrained to believe that the disease consists primarily and essentially in a misbehavior of the cell elements themselves, a perversion of the ordinary cell life of the epidermis." Jackson argues that the disease is a vaso-motor neurosis, and that the careful study of cases reveals antecedent nervous disorders. Several different varieties are described in form and location; the eruption is attended with itching, and when the scales are removed the surface beneath is reddened and slightly elevated. Owing to its location, flexion and extension of the limbs is sometimes difficult and painful, because of the stiffness of the skin.

Treatment.—Fisher recommends tar as the best of all external applications. Different oleates are also suggested.

Remedies.—*Arsenic*, *sepia*, *phosphorus*, *thuja*, *mercurius*, *phytolacca*, and *silicea*.

NÆVUS.—Two varieties of this disease obtain, viz., the vascular and pigmentary nævus. Nævi, usually congenital, are pathological changes in the skin, varying in color from white or pinkish to livid. Nævus vascularis is a discoloration of the skin, irregular in size and contour, smooth or slightly elevated, and is due

to a multiplication of the vessels in the subcutaneous cellular tissue. The pigmentary nævus, or mole, is due to the excessive deposit of pigment, or in conjunction with the multiplication of connective tissue. Often a growth of stiff firm hairs appear on the surface. They are frequently located on the neck, face, and back. Both varieties are usually permanent.

Treatment.—The safe and speedy method of electrolysis. Treatment with *caustics* is often effective.

Remedies.—*Calcarea carbonica*, *carbo vegetabilis*, *condurango*, and *thuja*.

LENTIGO.—(Syn. FRECKLES, EPHELIDES.)—Lentigo is characterized by small light or dark brown spots the size of a mustard seed or a split pea, due to the deposit of pigment in the rete-mucosum, and occurs chiefly on the exposed parts of the body. They may occur elsewhere and are usually discrete. They appear from the third to the sixth year, affect both sexes, but especially persons with fair skin and red hair, and usually continue for many years. They fade with the approach of mature and old age. The pathology is obscure. Shoemaker believes it the result of slight peripheral nervous disturbance.

Treatment consists in stimulating local applications. An ointment composed of ten grains of oleate of copper to an ounce of lanoline is recommended. Iodine and acetic acid applied locally may be useful.

Remedies are *calcarea carbonica*, *sepia*, *lycopodium*, and *sulphur*.

LEUCODERMA is characterized by the disappearance of the ordinary pigment from the skin in patches varying in size from a mere point to large spots. Its

usual site is on the exposed parts of the body and more frequently on the dark races than on the white. It is the antitype of lentigo and is usually permanent. No remedies are known to be useful.

ACNE is an inflammatory affection of the sebaceous glands. It is usually chronic and appears in the form of papules, pustules, or tuberculosis, single or multiple, and affects usually the face, neck, and back. They vary in size from a mustard seed to a pea. The papules or pustules may be few in number, or these localities may be profusely dotted with them. In scrofulous subjects, when the pustular form obtains, the face and neck may be much disfigured by them, except as a result of drugging with the salts of *bromide* and *iodine*, acne is not very frequently seen in children. The two forms of this affection are acne papulosa and acne pustulosa. All others are but modifications of these two types. The disease is most likely to occur about the age of puberty, and yields with great difficulty to treatment. Because of its general prevalence at this critical period many authors are inclined to attribute it to some derangement of the generative organs. It often occurs from digestive disturbance and from reflex irritation of the other organs.

Treatment.—Both local and constitutional treatment are required. The diet should be light and nourishing, avoiding all indigestible substances and rich condiments. The contents of the papules and pustules should be evacuated and frequent topical applications of hot water recommended. Various lotions are recommended, but are of doubtful utility.

Vapor baths may be useful and tar soap has proved helpful.

LUPUS is a chronic cutaneous disease sometimes affecting children. As defined by Dickinson, it is a cellular inflammation of the cutis, not forming new tissue but tending to a contraction or ulceration of the skin, through fatty degeneration and molecular destruction. Two varieties are named: Lupus vulgaris and lupus erythematosus. Lupus first appears as one or more reddish or brown spots of variable form and size and covered with thin, persistent scales. The initial lesions may vary in size from a mustard seed to a pea. When these are situated closely together as they increase they coalesce, forming patches of variable size and shape. In the tubercular variety ulceration of greater or less extent and depth occurs and sometimes terminates in malignant formations. While rarely fatal, lupus is a very persistent disease and not readily amenable to treatment.

Remedies.—The use of *tuberculine* by hypodermic injection has been attended in a few instances with the happiest results. Dickinson has successfully used *hydrocotyle asiatica*. Other remedies are *arsenic*, *thuja*, *aurum*, *calcarea carbonica*, and *hydrastis*. Caustic applications are of but little advantage.

MOLLUSCUM is a disease of the epithelial layer of the skin, distinguished by the development of one or more wart-like, rounded, soft, pinkish elevations from the size of a pin's head to a hazel nut. They are usually prominent, sessile or pedunculated, and exhibit a slight depression in the center. The orifice

of the gland duct opens in this depression, from which, by pressure, may be expressed a whitish, cheesy, sebaceous matter. It is slightly contagious. The etiology is obscure.

Mollusca fibrosum is a connective tissue growth in the skin and may attain a large size. They are usually multiple and occur on any part of the body.

Treatment.—The tumor may be incised and contents expressed. The application of a caustic to their bases is usually sufficient to destroy them. The electric cautery is probably the most effective method.

Remedies indicated are *silicea*, *thuja*, *teucrium*, *sulphur*, and *arsenic*.

VERRUCÆ.—Warts are hypertrophied papillæ of the skin and vary in size from a mustard seed to a split pea. They are conical, hard and sessile, sometimes nodulated or may be cleft. They usually appear in groups and their favorite location is the neck, face, and hands. They are particularly liable to occur in childhood, have no effect upon the general health and their etiology is obscure. They appear and disappear spontaneously and are painless.

Treatment.—In the writer's hands, *thuja* has been the most effective remedy. The cautery and *nitric acid* will sometimes remove them.

SCABIES is a contagious, parasitic, cutaneous disease. It is caused by the minute parasite, acarus scabei, burrowing in the skin, its presence being evidenced by papules, vesicles, and pustules, and is accompanied by intense itching. The severe irritation is produced by the female parasite as it burrows, making tortuous canals in the integument, in which it

deposits from ten to fifty ova. The itching from scabies is always worse at night and in persons with delicate skin. The site which is usually infested is between the fingers and about the wrists, on the breasts and the abdomen, and the internal part of the thighs. In children the inflammation produced by the parasite and the severe scratching not infrequently induces excoriated lesions and eczematous patches. The disease shows no tendency to a spontaneous cure. It is essentially chronic. Within a fortnight from the invasion of the disease the characteristic marks and the itching may appear on all parts of the body. The diagnosis is easily made and the cure of the affection is not difficult.

Treatment.—After giving the child a thorough bath with soap and water at bedtime, anoint the body with a *sulphur* ointment and in the morning remove the same by another bathing. This process must be repeated every third evening for a fortnight. Many ointments and lotions besides the above are recommended for the cure of scabies, but none has proved so effective in the hands of the writer. The internal administration of *sulphur* in potency is recommended.

SYPHILODERMA.—Syphilis, as it affects the skin in children, may be either hereditary or acquired. It is the product of a specific poison, the initial lesion of which is the chancre. These are simply the ordinary manifestations of secondary and tertiary syphilis on the skin. When this fact is once definitely determined, a vantage point of great importance is gained.

The erythematous form, according to Atkinson, be-

gins as discoid or oval spots about the size of the finger nail, and is of a pale red color, fading on pressure. They sometimes coalesce over large areas and appear on the abdomen, neck, and face. After three or four days the color changes to a dull yellow, and remains for several weeks, gradually fading without pigmentation. When the palm, soles, and firmer portions of the integument are affected, a thin desquamation occurs. In this form soreness of the throat sometimes obtains, and alopecia is not infrequent. Both the miliary and the lenticular form of papules occur in this type. They are usually pale red, and shortly change to the coppery hue indicative of syphilitic eruptions. Papules are usually discrete, are widely scattered, and are devoid of sensation. Both forms are chronic in character and manifest a marked tendency to recur.

The vesicular is a rare form and usually develops into the pustular variety.

The pustular form is indicative of the tertiary stage. They may begin as papules or vesicles, quickly changing into pustules, and may be acuminated or flat and are of various sizes. The purulent contents dry into heavy brownish crusts over an ulcer of greater or less depths. When these crusts are exfoliated the ulcer heals by granulation.

The tubercular syphiloderm is a firm, oval, nodular, smooth, reddish-brown mass in the skin, and is incident to the tertiary period. They appear on the face and neck, but may occur on any part of the body. Their growth is slow and after a few months they disappear by resolution or ulceration. The bullous

eruption evidences the profound inherited syphilitic poison in very young infants. These develop within the first few weeks or days, and consist of blebs varying in size from a pea to a walnut. They contain a serous or sero-purulent fluid and are surrounded by a brownish areola. Their favorite location is, according to some authors, the soles of the feet and the palms of the hands. According to others, they may locate upon the trunk or limbs. In a fatal case, recently treated by the writer, they appeared upon all parts of the body. Thick, greenish crusts form over the site of the lesions. Recovery is the exception.

The remedies indicated are those most useful in the syphilitic dyscrasia. Among these are *arsenic*, *kali*, *iodium*, *mercurius*, *kreosotum*, *mezereum*, *nitric acid*, *thuja*, *sulphur*, *staphysagria*, and *phytolacca*.

TINEA FAVOSA is the most intractable of the vegetable parasitic diseases. It is contagious and is distinguished by the presence of pale yellow, depressed, brittle crusts. The hair follicle seems to afford a nidus for the germ and the crusts are usually pierced by a hair. The hair becomes brittle and breaks off, or is even destroyed. The favorite location is upon the scalp, but no part of the body is exempt from the attack. The initial lesion is a small red patch of cuticle with slight itching and burning, shortly followed by an eruption of small vesicles. As the germs multiply the vesicles coalesce, shortly assuming a tawny yellow color, and become depressed beneath the surrounding level. These crusts are quite adherent over considerable areas, and the skin beneath is smooth and shining. According to Kippax, it pre-

sents under the microscope a field studded mostly with oval conidia, varied as to size, and mycelia of different lengths, and more or less filled with granules. The sulphur-yellow crust and the peculiar mouse-like odor are aids in diagnosis. The firm crusts pulverize beneath the fingers, or after a few weeks change to a greenish or dirty-yellow color. The brittle hair breaks off, is dry and easily pulled out by the roots, and is not likely to be reproduced on account of injury to hair follicles by the germ.

Treatment.—Cures are effected by the use of internal remedies and local applications of *parasiticides*. Of the latter, Shoemaker recommends *boro-glyceride*, to be followed by preferably the *mercurials* a few hours later. *Sulphur* ointment is one effective agent. Many others are effective if persistently used. Remedies useful are *agaricus*, *arsenic*, *baryta carbonica*, *dulcamara*, *graphites*, *lycopodium*, *mezereum*, *sulphur*, *viola tricolor*.

TINEA TONSURANS, or ring-worm, is a vegetable parasitic disease of the skin due to the trycophyton. When affecting the scalp, it is evidenced by itching and redness of the affected part. The hair becomes lusterless, lifeless, brittle, and falls out. The scalp, especially in children of the lymphatic temperament, is dotted more or less thickly with thin cursts. In aggravated form, vesicles or even pustules obtain, and because of the irritation excited may simulate an eczema. A single patch of the vesicles may appear, or the scalp may be dotted with groups of them. It is more readily detected and studied when appearing on the hairless portions of the body, especially

the neck and face, for which it seems to have an affinity. First, small groups of minute vesicles appear on a circumscribed, inflamed base, accompanied by itching and burning. New vesicles continue to appear about the margin of the original patch, which quickly dries and is covered with minute scales. As it heals in the middle, the newly formed vesicles on the margin continue to encroach upon the healthy tissue. This form of growth gives it the popular name of ring-worm. The patches may become as large or larger than a silver dollar.

Treatment.—The cure of this form of tinea is less difficult. A leaf of tobacco the size of the affected patch, moistened, and bound on it over night has, in the writer's hands, rarely failed to cure. A few topical applications of *acetic acid* is usually effective. The *mercurials* are also efficient. *Sepia* and *tellurium* are all the internal remedies needed.

CHAPTER X.

MINOR INFECTIOUS DISEASES.

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We will consider under this head measles, rubella, varicella, whooping-cough, and mumps.

MEASLES, RUBEOLA, OR MORBILLI.—Measles is an acute epidemic contagious disease, characterized by a peculiar papular eruption occurring usually on the fourth day of the attack, preceded by catarrhal symptoms and followed by slight desquamation.

Contagion.—The contagious principle exists in the breath, the exhalations from the skin, the blood, the tears, the nasal and bronchial secretions, and the urine and fæcal discharges. Infection takes place in the majority of cases through the mucous membrane of the respiratory tract, the inspired air carrying the active contagious principle. It affects both sexes alike and equally.

Susceptibility.—Infants under six months are generally exempt. It is a disease of childhood, but adults who have never had it are susceptible.

Symptomatology.—The disease has four stages, incubation, invasion, eruption, and decline.

INCUBATION.—The period elapsing between ex-

posure and the commencement of the manifest symptoms varies from seven to twenty-one days.

Invasion.—The stage of invasion may be ushered in abruptly by vomiting, chills, fever, headache, pain in the back and limbs, and accompanied by catarrhal symptoms of the mucous membranes of the eyes, nose, throat, larynx, trachea, and bronchial tubes; usually, however, the onset is gradual, and loss of appetite, malaise, and mild catarrhal symptoms with slight fever are first observed. Muco-purulent symptoms with frequent sneezing are common, followed by or accompanied with an annoying cough. The fever during this stage ranges from 102 to 104 degrees.

Eruption.—About the fourth day the eruption appears on the forehead, temples, and cheeks, and gradually extends to the face, neck, extremities, and trunk. The eruption at first appears as minute red spots, rapidly increasing in number and size and becoming papular may run together, forming crescentic spots upon the clear white skin. The catarrhal symptoms and cough continue during this stage, which lasts from five to seven days.

Decline.—The eruption has faded, the fever subsides, but the catarrhal symptoms still continue and are the last to disappear. The appetite and natural disposition of the child return; and slight desquamation takes place. At times we find cases of morbilli sine catarrh, also morbilli sine exanthemata.

Black or **malignant** hemorrhagic measles are characterized by rapid, feeble pulse, high temperature, cold extremities, patient is anxious and restless, or

somnolent with a tendency to convulsions or coma. Death may take place before the rash is developed, or there may appear confluent, dark liquid or black papules, which fading leave dark yellow stains. This type occurs in broken-down subjects and those suffering from dyscrasiæ, and is extremely fatal.

Complications.—Measles may be complicated with conjunctivitis, stomatitis, cancrum oris, diphtheritic throat, bronchitis, pneumonia, enteritis, colitis, otalgia, or otitis.

Prognosis is favorable if previous health was good, the eruption comes out on time, there be no untoward symptoms nor any dangerous complications. One attack commonly protects against subsequent infection, but occasionally there will be a second attack and a third is not unknown.

Treatment.—The treatment is preventive, hygienic, and therapeutic. Isolate the patient in a large, well ventilated apartment. Shade the eyes, but do not shut all light from the room. Disinfect all clothing and patient's former apartment, also all discharges. Give patient plenty of cool water to drink. When the rash is tardy and temperature very high, a warm bath and some hot lemonade will assist in bringing it to the surface. The room should be kept at a temperature of about 65 to 75 degrees F. or such other temperature as the patient is used to. The diet should be light, consisting of soups, cereals, bread, toast, milk, and, if the bowels are not disordered, fruits. When the fever, catarrhal irritation, and desquamation have passed off, a warm bath should be taken, followed next day by a tepid or even cool bath, rubbing briskly

so that no cold is taken. After this, patient may be allowed to go out if the weather be favorable.

VARICELLA, OR CHICKEN POX.—Named from its resemblance of the vesicles to size of chick-pea. Not a disease of domestic fowl.

The susceptible period is from birth to five years, but it has been met with in adult life. Chicken-pox is epidemic. Never attacks but once during life. Rarely presents a prodromal stage.

Symptomatology—It usually begins with headache, slight fever, gastric disturbances, and prompt appearance of the eruption. Often the appearance of individual vesicles about the roots of the hair and on the back are the first evidences of the oncoming of the disease, or it may begin with chilliness, intermingled with hot flashes, headache, peevishness, thirst, and general unrest appearing twenty-four hours before the appearance of the vesicles, the fever ranging at this time from 99½ to 104 degrees F. The eruption occurs in successive crops, the first efflorescence hardly attains its maximum until the second crop comes out, the whole occupying from twenty-four to thirty-six hours. The vesicles are most numerous on the forehead and back, each vesicle consisting of a body or base, red, and looking like a hyperæmic spot, varying in size from a pin-head to a split pea and an apex or vesicle which appears later, ovoid in form, one celled, and filled with clear lymph, which, as it dries, causes the convexity of large pocks to collapse and the apex to become concave, which usually occurs a few hours after its appearance. The disease runs from one week to twelve days.

Diagnosis.—Varicella may be differentiated from small-pox by the short invasion and slight or wanting constitutional symptoms; the eruption being superficial and not hard, and nodular and like shot, and it presents its vesicles at once. The vesicles of chicken-pox are one celled, never partitioned, never confluent, and do not aggregate over face, hands, and feet. Umbilication is rare, belongs only to occasional and large pocks. The disease is uninfluenced by vaccination or previous attacks of small-pox.

Prognosis.—The prognosis is always favorable, except when complicated with scarlet fever, syphilis, tuberculosis, or small-pox.

Treatment.—The patient should receive nourishing food and plenty of fresh air, but no bathing during vesicular stage.

RUBELLA, RÖTHELN OR GERMAN MEASLES.—Rubella is a disease closely resembling measles at times and a mild form of scarlet fever in other epidemics, but which does not afford immunity from either, nor is the child immunized by a previous attack of either of the other diseases. It attacks children of all ages and adults.

Susceptibility.—Children under five years of age are the most susceptible.

Incubation.—Period of incubation from one to three weeks, but it usually develops in about ten days after exposure. It is not fatal and there is rarely any *sequellæ* following it. It may occur sporadically as well as in epidemic.

Symptomatology.—It begins with headache, shivering, chilliness intermingled with heat, some sore-

ness of the throat, aching of the limbs, and a general feeling of discomfort. In from twenty-four to thirty-six hours an eruption will appear on the face and forehead, spreading thence over the trunk and limbs; or it may appear without any prodromic symptoms, and may present itself on the entire bodily surface within a few hours after appearing on the face. The eruption is papular, smaller than measles, and does not aggregate in crescentic bodies, is bright red in color and not scarlet. The eruption lasts from five to six days, but begins to pale off after the first thirty-six hours. Desquamation takes place in bran-like scales. The throat is sore, of a deep red color, the tonsils being swollen and painful when swallowing. These throat symptoms usually subside with the fever and rash.

DIFFERENTIAL DIAGNOSIS. — Rubella. — The rash is erythematous, rough, papular, and appears on the face and forehead. The pulse is not rapid, rarely above 110. The temperature rarely above 102 degrees. Desquamation is bran-like and the catarrhal symptoms are slight.

Scarlet Fever. — The rash is punctiform, diffused, skin high colored, scarlet. The rash begins on the neck and upper part of the chest. There is an absence of catarrhal discharges from nose and eyes. A white line is seen about the mouth and wings of the nose. Pulse is rapid, temperature high, and the disease is generally ushered in with vomiting. Desquamation is in large scales and masses.

Measles.—Has more pronounced catarrhal symptoms, hoarse cough, presence of the rash in the

mouth, and the measles smell. The rash is more general, confluent, and crescentic in appearance.

Caution.—If the diagnosis is doubtful, take all the precautions necessary for the more severe disease.

Therapeutics.—For rubella the following remedies will be most frequently indicated: *Aconite*, *belladonna*, *ferrum phosphoricum*, *dulcamara*, *cantharis*, *apis*, *hyoscyamus*.

For varicella the remedies most often used are *aconite*, *belladonna*, and *pulsatilla*. A very few doses of either one, according to the symptoms, will be all that is necessary in the large majority of cases.

For rubeola, *aconite*, *arsenic*, *belladonna*, *bryonia*, *camphora*, *cuprum*, *euphrasia*, *ipecac*, *kali bichromicum*, *mercurius*, *phosphorus*, *pulsatilla*, *rhus toxicodendron*, *sulphur*, *veratrum viride*.

PAROTITIS, OR MUMPS.—A contagious, epidemic, inflammation and enlargement of the parotid glands on one or both sides. Generally occurring in youth, acute in its origin and course, accompanied by fever and fever symptoms, followed in some cases by an abscess of the gland, but usually subsiding in a week or ten days without leaving any trace. Epidemics are usually in the spring or fall.

Susceptibility is confined to the period of childhood and early youth, although adults who have never had it are susceptible. Males are more susceptible than females. One attack gives immunity from others.

Symptomatology.—The period of incubation is from six days to two weeks. Prodromic symptoms are slight or wanting. The patient often first expe-

riences shooting pains beneath the lobe of the ear during motion of the jaw. A deep seated swelling soon appears, gradually increasing until the side of the face and neck are implicated, the head being usually inclined to this side. Later the other side will take on a similar swelling. In many cases there is very little or no inconvenience from this condition; in others, there is excruciating pain on swallowing, difficulty in enunciating words, and great salivation, ringing in the ears, with loss of appetite, vomiting, constipation, etc. Metastasis sometimes takes place. When it does, there will be a rapid disappearance of the swelling, which in boys is followed by orchitis of the same side, with scrotal œdema. In girls, the breasts or ovaries may be affected by this metastasis. This inflammation usually runs about the same course as mumps, or may subside and be followed by an exacerbation of the parotid symptoms. The duration of the disease is about ten days. Death rarely, if ever, occurs. Cooling drinks and a light nourishing diet are indicated. Avoid wet, dampness, violent exercise, or straining.

Therapeutics.—The remedies most frequently indicated are *belladonna*, *mercurius*, *rhus*, *euphrasia*, *carbo vegetabilis*, *cocculus*. Metastasis may call for *arsenic*, *aurum*, *carbo vegetabilis*, *nux vomica*, *pulsatilla*, etc.

PERTUSSIS, OR WHOOPING-COUGH.—Symptomatology.—Whooping-cough is a communicable disease depending on a specific poison, prevailing epidemically and sporadically. It is characterized by fever, malaise, irritation of the respiratory tract, ca-

tarrh, and subsequently by a hard, dry, convulsive, paroxysmal cough. It attacks both sexes and all ages, but especially children, rarely occurring more than once. The period of incubation varies from four to fourteen days. It usually runs a course varying from three weeks to three months. It is most fatal in children under three years of age, in females, and in cold weather.

Complication.—It may be complicated with other lesions, as ulceration of the frænum linguæ, capillary bronchitis, emphysema, hemorrhages, etc.

Prognosis.—Whooping-cough in the first stage appears like a common cold or coryza. The second stage is characterized by a whoop and a paroxysmal cough with vomiting. The third stage is a stage of decline.

Treatment.—The child should be isolated in well ventilated apartments, with an even summer-like temperature, and, when the weather will permit, should be given an airing daily. Cleanliness, fresh air, light and nourishing diet are absolutely essential. The apartments and clothing should be disinfected and the ejecta from the nose, throat, and stomach should be received into a cloth, which should be burned, or into water containing a disinfectant.

Therapeutics.—This disease requires careful individualization in the selection of the remedy. The therapeutics are too voluminous for a book of this character.

CHAPTER XI.

CHOLERA INFANTUM.

BY CHARLES D. CRANK, M. D., EMERITUS PROFESSOR OF PEDIATRICS, PULTE MEDICAL COLLEGE, CINCINNATI, OHIO.

Etiology and Pathology.—In the examination of a class of medical students, one of the questions was, "Give the etiology and differential diagnosis of cholera infantum." The reply was, "I do not know the exact etiology of cholera infantum, but I do know that it is not summer complaint, the so-termed scourge of American cities." However incomplete the answer, it expressed the consensus of the medical opinion of to-day. The want of uniformity, both in anatomical examinations and in the study of conditions, has led to diversity of opinion among writers. Some authorities pronounce cholera infantum inflammatory in its nature, claiming that *post-mortem* examinations evidence the "essential lesion," and that when the lesion is wanting, the onset has been so severe and the effect so disastrous as to produce death before the alimentary tract had time to undergo the essential structural change. Equally good observers fail to confirm such changes, claiming that they appear only when the case has passed beyond the acute. Rapidity of action is the characteristic and alarming

feature of cholera infantum. It runs its course quickly, and inflammatory lesions *may* quickly supervene, but such lesions are no more a part or an "essential lesion" of cholera infantum than is nephritis of scarlet fever or paralysis of diphtheria.

In any event, classification of infantile intestinal troubles does not depend upon pathological findings, and practically is of no service in the treatment. Symptomatology teaches us that cholera infantum is not entero-colitis, neither is it simple diarrhœa, and, as compared with either, it is a rare disease and entitled to a distinct nosological position.

In an orphan asylum in which are confined never less than one hundred infants and children, during a period of eleven years there is recorded but four cases of cholera infantum, while both the inflammatory and simple forms of bowel troubles were not of infrequent occurrence. Extreme heat and the vitiated atmosphere of our crowded cities are supposed etiological factors; but from careful investigation it appears that cholera infantum does not depend upon high temperature alone, for it is not so prevalent in southern latitudes. The only noted effect of temperature was when it continued high both day and night; and further, that in proportion to population (with children at the breast) it was as frequent in rural districts as in towns and cities. The influence of rainfall and humidity was observed for a number of years, and show that cholera infantum was more prevalent during a dry than a wet season. The fact that cholera infantum is rarely encountered abroad has suggested that the frequent and sudden climatic changes,

conditions so peculiar to the United States, are a causative factor of prime importance.

The suddenness and violence of attack, followed so quickly with well marked nervous phenomena, suggests a "neurosis"—the exosmosis of serum through the alimentary mucous lining being due to disturbance of the "vaso-motor." The undeveloped nervous system of the infant, enfeebled by teething and prolonged high temperature, disturbs the equilibrium, bringing about a form of vaso-motor paralysis.

The frequency of cholera infantum during the heated term, the high body temperature, 105 degrees F. and higher, together with the suddenness and violence of attack, contracted pupils, embarrassed respiration and suppressed urine, establish a striking similarity to sun-stroke, or thermal fever, but the points of dissimilarity are sufficient to clearly determine a distinct diagnosis. Many other theories have been advanced, but no one has been found all sufficient. The weight of opinion favors the ingestion of poisonous food, and the presence of bacteria. The profession awaits the isolation of the poison and the germ.

Nomenclature.—Cholera infantum, or cholera in the infant, derives it name from its close resemblance to cholera in the adult, though considered in all its features it is more analogous to cholera morbus. The three choleras, Asiatic cholera, cholera infantum, and cholera morbus, manifest a close resemblance, and the most casual observer could not fail to discover that they are members of the same family. During an epidemic of Asiatic cholera it is not possible to diagnose

it from cholera morbus, and the age alone warrants us in pronouncing similar manifestations cholera infantum. Johnson refers to the remarkably close similarity in the etiology, symptoms, and pathology of cholera infantum and cholera morbus. A study of the three choleras leaves but little doubt that the causative factor is the same in all; a micro-organism, same in nature, differing in degree. In Asiatic cholera, it has been acceptably demonstrated. Cholera infantum and cholera morbus await further research.

Since the reports of Escherich, Bagnisky, Jeffries, and Booker, no new developments have been made in the isolation of intestinal bacteria. We do not *know positively* that any form of infantile intestinal troubles sustain a constant relation to any variety of bacteria, but there is a growing belief that all are due to toxicogenic (poison producing) bacteria, and while these may be true infectious diseases of the infantile intestinal tract, due to the invasion of pathogenic micro-organism independent of the form of nutrition, yet we are obliged to acknowledge that the great and principal source of trouble originates from abnormal processes of fermentation in the milk, or in the collective contents of the intestines, due to germ life.

Vaughan ignores the term "cholera infantum," and calls it "acute milk infection," claiming that it practically never occurs with infants at the breast. The exception, if there be any, he adds, must arise from the introduction of powerful toxicogenic germs. Entero-colitis he terms "acute milk infection."

Biggs refers to three forms of intestinal bacteria, which sustain causative relation to three forms of

intestinal summer troubles. First, that arising from ptomaines (toxicogenic micro-organisms), formed outside of the body and taken in with food. To illustrate: I was hastily summoned to a three-year-old child, who was suddenly awakened from sleep with a most violent attack of vomiting and purging. Though very severe for an hour or more, it gradually subsided. The cause was referred to some ice-cream which the child had partaken of during the evening. Upon my return home I responded to another urgent call to find a child similarly affected, and attributed to ice-cream obtained from the same source, and before morning a third case was added to the number infected from the same source. Ptomaines, tyro-toxicon, developed in the ice-cream, was introduced into the body and acted as a physiological poison. Though adults had partaken as well, they were able to resist pathogenic effects. The second class is due to saprophytic bacteria taken with the food and developed in the intestines as well, producing fermentation and decomposition of food, setting up inflammatory conditions. The third class is caused by specific pathogenic germs, producing powerful toxicological effects, even to paralysis, collapse, cholera.

Symptomatology.—Cholera infantum is mostly confined to the period of dentition, most frequent during the first ten months of life, and among the bottle-fed. It diminishes in frequency as the child advances in years, and is rarely reported after the third year. It is sudden in its attack, rapid in its course, and distressingly fatal in its results, exceeding that of Asiatic cholera in the adult. A prodromal stage is

usually present, but not always recognized, consisting of unusual restlessness and more or less disturbed digestion. If during the heated season a child under two years be suddenly attacked with vomiting and purging you would think it due to some article of food, possibly fright or a fall upon the head; in either instance the vomiting or purging, or both, in the course of an hour or two would quietly subside, but if it be violent and persistent we would pronounce it cholera infantum. Sudden attacks of vomiting and purging are not infrequent with children, but the violence and the persistence of the attack is unusual, and is a pathognomonic of cholera infantum. The profound prostration rapidly following, the extreme restlessness, increasing and unquenchable thirst and abdominal pain accompanying, form a combination of symptoms not seen in any other infantile intestinal disease. The vomiting and purging continue; the little one, who but a few hours before was rosy and plump, his merry chatter indicative of health and happiness, is now scarcely recognizable. The pale, pinched features, the staring eyes and sunken cheeks, the shrunken hands, the cold skin and clammy perspiration, the beseeching moan and half open mouth, impress you with the critical nature of the trouble. And now follow cold breath, the almost imperceptible thready pulse, the irregular and rapid respiration, tendency to cramps in the extremities, cessation of vomiting, approaching drowsiness, collapse, convulsions—*Cholera*. The discharges from the bowels number from twenty to forty in the twenty-four hours. After the evacuation of fæcal matter they be-

come colorless, inodorous, and so serous as to soak the napkin without leaving a stain. They may contain a minute flaky substance of yellowish-green with a peculiar musty odor. The discharges occur without effort, though sometimes accompanied with tenesmus, ofttimes with considerable force. Vomiting closely accompanies the action of the bowels, though perhaps not so frequent. The stomach is excessively irritable, rejecting with force everything administered, followed by frequent and violent retching, appetite gone, but the insatiable thirst continues. If convalescence be not fairly established by the third day, *sequela* may be expected. Approaching convalescence is indicated by gradual cessation of all the violent symptoms first observed, diminished vomiting and retching, less thirst, increased urine, decreased temperature and pulse, snatches of sleep; a little food is retained, and the child begins to manifest returning life and vitality. Recovery may be tardy and relapse not infrequent.

Treatment.—In considering the treatment of cholera infantum, two facts stand boldly out, around which center the hopes and fears for our little ones: First, the sickness and mortality is largely confined to the bottle-fed; and second, to the teething period. It is not necessary to elaborate the fact that so highly organized nitrogenous food as milk is the most suitable culture medium for the reception and development of bacteria. "Improperly fed infants furnish the best known culture tube for the growth of harmful bacteria." It would seem superfluous to refer to dangers seen and unseen in providing the infant with

a suitable substitute for the natural breast milk. I will simply refer to the necessity of pure fresh milk, its care and preparation, that of the bottle and all that pertains to it, and to the great advantage of sterilized or pasteurized milk. Too much stress cannot be laid upon these points, as well as upon the great danger of overfeeding. During hot weather, thirst is mistaken for hunger, and overfeeding is the result, with disastrous effects.

Let there be system and order in the care of the little one, strictly observing every sanitary precaution, throwing about the child every protection without squeezing the little life into unreasonable bounds,—the result of undue fear and anxiety. Plenty of pure water should be given, sponge bathing at least twice a day, using water at the temperature of ninety, adding a little salt. Avoid unnecessary clothing, but always protect the "workshop," the abdomen, by a flannel or knit worsted band. All clothing should be frequently changed. "Sleep is Nature's great restorer," and a child two years of age should receive not less than twelve hours sleep out of the twenty-four. Well ventilated sleeping apartments of course are preferred, and cast-off garments, soiled napkins, etc., not permitted to remain in the room. During an attack disinfectants are indicated. Fresh air and sunlight are essential to health, a daily outing always advisable. Unnecessary exposure must of course be avoided. The teething period renders the infant far more susceptible. All of the physiological processes are more active as the little organism is undergoing rapid development. The brain doubling its weight

during the first two years of life, is an expression of the rapid organic and functional changes going on. Therefore, everything that tends to strengthen and invigorate is to be encouraged, and nothing that tends to depress or enervate to be tolerated—for the effect of pathogenic germs in the system depend upon the power of organic resistance.

Remember that improper food and feeding may produce cholera infantum however hygienic the care and management, and on the other hand mother's milk or the most suitable hand food will not prevent cholera infantum when other conditions necessary to health are neglected. Eternal vigilance in the observance of *all* of Nature's laws is the price of the life and health of the infant.

Recovery from an attack of cholera infantum depends upon the inherent powers of the little organism to resist and overcome pathogenic influences supplemented by our efforts to support and steady the ebbing vitality which threatens a collapse. To that end must be directed our every effort. It calls for active and well defined ideas regarding both medicines and auxiliary aids.

Our first order would be to stop all food, not a drop of milk to be given either from breast or bottle. The child is cold, has no surface circulation; employ, without delay, suitable means to maintain and promote animal heat. The child is exhausted, prostrated; employ every proper means to support strength and prevent collapse. For the promotion of warmth do not resort to hot tub bathing, but wrap the child in a warm blanket or in a sheet wrung out in hot water and en-

velop in a hot blanket, with hot water bags or hot bottles about it. Give plenty of pure water to drink, even though it be vomited, and continue to feed water. Do not fear to stimulate so long as the anterior *fontanelle* is depressed, giving it hypodermically, if necessary. Sips of hot water with a few drops of whiskey are in order, but it is not as gratefully received, and I have never seen reason for preferring hot drinks to cold. Bits of ice should not be refused; iced tea or a few drops of black coffee are highly recommended. Let the child rest in a horizontal position on the bed or pillow, avoiding strong lights and disturbing noises. Change the napkins at once when necessary, and disinfect them. As soon as stomach irritability sufficiently abates, put the child to the breast but for a moment. If bottle fed, it is far better to secure a wet nurse, if only for the emergency, and if too feeble to nurse, feed the breast milk from a spoon. If the wet nurse be impracticable, dissolve egg albumen in tepid water and feed in sips, or soak a linen rag in diluted cold cream and let the child suck it. Weak animal broths—mutton, chicken, or beef—are preferable to cow's milk or milk preparations.

Shall we wash out the stomach and irrigate the bowels? The trouble, though of gastro-intestinal origin, is no longer local, and is not inflammatory. The toxic effects are systemic, the absorbing surface has largely lost its powers of absorption, and so long as food is withheld we have but little to fear from further infection. The excessive vomiting has emptied the stomach of its contents and giving freely of water to drink has accomplished all "washout"

necessary. I cannot see any decided advantage in any further "washout" and can see unpleasant effects. Shall we irrigate the bowels? If the movements are acrid, very scant and with tenesmus, warm water injections containing *salol*, freely administered, will give relief. The purging and vomiting, though serious, are not the disease. They are secondary, and will subside as the toxic condition exhausts itself.

The first evidence of improvement will be in the decrease of vomiting and purging, but the improvement most to be desired is the cessation of purging and improvement in the character of the stools. The symptoms are many, but the drugs most frequently indicated are few, and so closely related as to render a scientific discrimination no easy task. Not one symptom under *veratrum* but can be found under *arsenicum* and whichever you may have given, if you have occasion to refer to your "book," you will wish it had been the other. There are a few well marked indications, however, that will assist us in a choice. "*Arsenicum* is the greatest of medicines, because the greatest of poisons." In cholera infantum we are dealing with a profound toxic condition, with accompanying severity of symptoms.

Arsenicum is indicated when there exists a rapid sinking of vitality, and rapid emaciation, and the least exertion exhausts. When this is the marked feature of the attack, *arsenicum* is the remedy. Extreme restlessness, suppression of urine, scanty discharges, with tendency to excoriate, confirm it.

When the vomiting and purging is the marked feature of the attack, aggravated by the least motion,

veratrum album is the remedy. The exhaustion, though rapid, the prostration, though marked, does not equal that of *arsenicum*. "In *veratrum* the case is getting worse, in *arsenicum* it is worse." The peculiar cold sweat on the forehead, easily aggravated, is *veratrum*—while excessive restlessness is more peculiar to *arsenicum*. *Veratrum* has more pain, while *arsenicum* has greater thirst. *Veratrum* gives us all the characteristics of cholera infantum, and will probably meet more of the indications as they USUALLY appear than any other one remedy. When the case is UNUSUALLY severe, *arsenicum* comes to the front.

When muscular cramps tend to aggravate the situation, *cuprum* is to be thought of. When the vomiting is a distressing feature, *carbolic acid* will be found of great service. Two or three drops in a half a glass of water, half a teaspoonful every half hour. Did I not know of *veratrum* or *arsenicum*, I would turn to this remedy with confidence in the general treatment.

I was sent for to see an infant at the asylum; it was not possible for me to respond until afternoon, when I found the little one much prostrated from an attack of cholera infantum. The nurse, weary of waiting for my coming, and appreciating the necessity of doing something, wrapped the infant in warm blankets and gave it *aconite* every fifteen minutes. Though at times she thought the infant dying, she continued the *aconite* and after the second hour began to see some improvement, which had slowly continued up to the time of my arrival. Suppression of urine, small evacuations, extreme restlessness, led me

to give one dose of *arsenicum*, with directions to return to the *aconite* which had been of such service. The infant made a good recovery. The nurse had occasion to employ *aconite* in another case equally severe, and with equally good results.

Subcutaneous injections of *chloride of sodium* constitute a method which is easy of application, and we are told, absolutely harmless, if administered with antiseptic precautions. It should be made before collapse has reached a marked degree and before the circulation has been impaired. It is better to be given with the first sign of collapse, and to repeat it as often as evidences of marked depression are observed. The solution should be of the strength of three-fifths of one per cent, the quantity to be injected, from thirty to fifty grammes. I have never had occasion to employ it.

CHAPTER XII.

DIPHTHERIA AND SCARLET FEVER.

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DIPHTHERIA is now considered a specific, infectious, and probably contagious disease.

Etiology—The weight of authority seems to be in favor of the recognition of the Klebs-Loeffler bacillus as the specific germ, and hence cause of the disease. This bacillus was discovered by Klebs in 1883 and by Loeffler in 1884, and from that time until this it has been carefully studied by bacteriologists, assisted by clinicians. At this time I am unable to find among the authorities one dissenting voice from the Klebs-Loeffler conclusion of 1884. A few sporadic writers deny the germ theory of the disease, but without being able to suggest in its place even a reasonable hypothesis. During the growth of the bacillus of this disease there is produced by it a ptomaine, a poisonous proteid, and this, not the bacillus, is the direct cause of the symptoms of the disease. The bacillus is rarely, if ever, found in the blood or tissues of the body, except at the point of infection.

The ptomaines may be applied to healthy mucous membrane without injury, but if once introduced into the system we may observe the symptoms and poïson of diphtheria. That the ptomaines are the direct cause of the disease is evidenced by the fact that if the bacilli of the diphtheritic membrane are entirely destroyed, the disease is still induced by inoculation with the membrane. It is questionable whether the bacillus will, by itself, attack healthy mucous membrane. If it does not, it probably attacks surfaces already injured by the strepto and staphylococci, or surfaces otherwise denuded. There are bacilli that seem to be identically the same as the Klebs-Loeffler bacilli, which are found in the throat of seemingly healthy subjects. This bacillus has been considered by some to be the bacillus diphtheriticus, shorn of its virulence; but it seems just as probable that it is the virulent bacillus resting upon the mucosa of persons who are unsusceptible, either on account of a healthier, firmer texture of the mucosa itself, or from a general immunity of the system. Briefly stated, we may consider diphtheria a constitutional disease, the result of absorption of a tox-albumen from a point of local infection. This tox-albumen has been isolated and found by inoculation to induce all symptoms of constitutional diphtheria that are caused by the bacilli. The bacillus diphtheriticus retains its vitality at ordinary temperature for an unlimited time, even when dried in its native membrane, or on threads, clothing, etc. It is destroyed at 136.4 F.

Contagion and Incubation.—Contagion is prob-

ably most common from the bacilli coming in direct contact with the mucous membrane of the nose, pharynx, or larynx from some person bearing within the respiratory passages these elements of contagion. Infection may, however, take place from bacilli which have been carried even in a dried state, upon inorganic surfaces. It should be borne in mind that not only is the diphtheritic patient a source of contagion, but the bacilli may be conveyed in the throats of those who have come in contact with the patient, and this even though they themselves may never develop the disease, and that the most malignant case may be developed from such a source.

The stage of incubation is probably very short; from a few hours to a week or ten days at the longest. If the present theory of the disease is correct, it is barely a question of how quickly the bacilli may grow and develop their ptomaines in the throat. They will probably do this either from contact with an abraded surface, or by the assistance of their associates, the strepto or staphylo-cocci in the above time, if at all.

Pathology.—Neither the pathology or morbid anatomy of diphtheria seem to be thoroughly understood. There has never been any satisfactory article upon this subject, and there certainly is nothing new in the literature of the past year. We know what the lesions are, but we do not adequately understand the cause of these lesions. Perhaps the most important change which seems to be noticeable, and thoroughly demonstrated, is an impoverishment and apparent defibrination of the blood. It seems to assume, in malignant cases, much the same character

as the blood of persons poisoned by snake bites. This condition of the blood is undoubtedly the source of some of the hemorrhages which we occasionally have in malignant cases, and is also probably largely the cause of certain phenomena of the nervous system which are very frequent. It is hardly worth while to attempt to say more upon this subject until it is more thoroughly understood.

Clinical Course.—Diphtheria may or may not be ushered in by a chill, which may or may not follow a day or two of lassitude. Immediately supervening upon the earliest symptoms, which, if without chill, consists at least of a brief period of lassitude, there appears a temperature of from 101 to 103 degrees F. The fever at this time is not infrequently higher than any other time during the course of the disease, though it may persist until early convalescence. This is accompanied by general aching of the back and extremities. Commonly within a few hours one or both of the tonsils become reddened and covered with a greater or less area of a dirty white membranous coating. Of course this membrane does not always appear in the throat first. It may appear in the nares, or it may even appear in the larynx. If the membrane appears first in the throat, the case is at least easily diagnosed. From thence it may spread either to the nose or larynx, or both. If, however, I may be allowed to speak from experience, I would say that when it spreads from the throat to the nose, I rarely find it tending to the larynx. On the other hand, when it tends from the throat or pharynx to the larynx, I rarely find much implication of the nares.

The course of the disease is, in my opinion, governed very largely by this turn. If the membrane spreads to the larynx, our principal difficulty will be in overcoming a condition of stenosis or obstruction, and a possible bronchial pneumonia, which last condition is probably due to the associated germs. In this case the blood poison is not usually so marked, or at least not until a condition of broncho-pneumonia supervenes. On the other hand, if the membrane tends to invade the posterior nares, where we know the absorbent vessels to be especially plentiful, we will very likely avoid laryngeal complications, but will usually have to fight a case of excessive malignancy on account of the septic condition of the blood which early obtains.

In a work of this kind it is scarcely necessary to go into the minute symptoms of the disease, which are so familiar to every practitioner, but better to bring out more prominently those points which are the result of experience. The membrane ordinarily increases in the throat for the first two to four days, but the fever is very apt to remit to quite an extent, and we must not allow ourselves to judge our case by the temperature, as many very malignant cases have a temperature running quite low. If the case progresses favorably, we have the throat beginning to clear about the fourth day, with a convalescence steadily progressing, and usually reasonably complete in from seven to ten days. In these cases we usually escape with very little systemic infection.

Where the disease does not progress favorably, but tends from bad to worse, the course is governed

largely as mentioned above, by the direction in which the membrane seems to spread. If we are to have a laryngeal case, within from two to four days the exudation has usually reached the larynx, and we begin to hear the croupy cough. This cough increases very rapidly, and usually within forty-eight hours, unless we are able to relieve it, we will see our patient very rapidly succumbing to stenosis of the larynx. Sometimes however, in these cases, the fatality is not so much from absolute stenosis of the larynx as from the bronchial pneumonia, which is the *sequela* of laryngeal affection.

Where bronchial pneumonia obtains a strong foothold, the course is usually very rapid and very fatal; and we then begin to observe systemic infection. The course of the disease when we avoid bronchial pneumonia, and only have to combat laryngeal stenosis, is known by all;—gradually increasing difficulty in breathing, croupy cough, becoming higher and harsher until the stenosis is so great that even the cough becomes but a squeak, depression of the subclavicular region, abdominal respiration, and asphyxia. These symptoms are not usually accompanied with extensive swelling of the cervical glands. On the other hand, if the membrane tends upward, and spreads through the posterior nares, we may expect rapid absorption of septic material, and extensive infiltration and swelling of the cervical glands of the neck. There will be a sanious acid discharge from the nose, a rapidly weakening heart, and probably albuminuria. In this case our struggle will be largely against septic infection, and the course of the disease,

in these cases, where resolution does not come promptly, but where marked septic infection obtains, may at best be prolonged indefinitely.

Though I have briefly outlined the probable course of the symptoms as they seem to me, let me not be misunderstood. In any case of diphtheria the symptoms may, and are quire apt to, deviate from the expected, and before the course of the disease is ended, combine more or less intimately all known types.

Complications and Sequelæ—Bronchial pneumonia is a very common complication; it is probably due to infection by strepto and staphylo-cocci, which we have already spoken of, and being the result of systemic infection, what we have to say under treatment will be more important than what we could say at this point. Nephritis proper is not so common, but albuminuria is very common in severe cases. Its danger probably lies in the neglect of unrecognized conditions which gradually lapse into a chronic nephritis. The tendency, with proper care and treatment, is to recovery. Hemorrhage from nose, throat, or bowels occasionally occurs, and is unquestionably due to defibrination of the blood. Paralysis is a frequent accompaniment, and may present dangerous symptoms. It is often fatal when, during the course of the disease, it attacks the heart or respiratory organs. Post-diptheritic paralysis, which is probably the result, usually, of a peripheral neuritis, may be of some extended duration, but tends toward recovery. Anæmia and chronic catarrh are often a more or less temporary sequence of diphtheria. Both should yield readily to proper treatment.

Diagnosis.—In the opinion of the writer there is only one thing to be said about positive diagnosis of diphtheria. The only absolute method in obscure cases is that of the bacteriologist. The only two diseases for which diphtheria is apt to be mistaken are probably follicular tonsillitis and so-called membranous croup. Some of the cases of so-called follicular tonsillitis, when examined by the bacteriologist, prove to be undoubted cases of mild diphtheria, and by contagion may induce cases of malignant diphtheria, the origin of which might rest in obscurity. At the present time it is a question in the minds of many authorities whether or not there is any membranous croup, except of diphtheritic origin. Briefly stated, we may find the Klebs-Loeffler bacillus in a person where diphtheria has not developed, but we cannot find diphtheria without the Klebs-Loeffler bacillus.

Prognosis.—The prognosis of diphtheria is very uncertain. Apparently mild cases may suddenly become malignant, and apparently malignant cases may suddenly become rapidly amenable to treatment. One should always give a guarded prognosis. Careful study and great watchfulness, accompanied by the blessings of intuition, must be the practitioner's safeguard against sudden surprises which would be a source of regret to him and a cause of loss of confidence on the part of his patrons.

Treatment.—I think those who have had any extended experience in the treatment of diphtheria will bear me out in the statement that there is no one great thing which has been especially successful in the management of this disease, but rather the care-

ful attention to a great many small things. First, the patient should be placed in a well lighted, sunny room, with good, indirect ventilation, and an even heat; the room to be shorn of carpets, draperies, and all unnecessary adornment. He should be fed upon liquid food, of which there is nothing better than plain cow's milk, *Mellin's Food*, and egg-nog. This should be given freely, in severe cases at least as often as once in two hours. For stimulant, I say unqualifiedly, give whiskey, and give it freely the alternate hours. Your patient cannot take enough to intoxicate, and when he can, you may have hope of his recovery. There is nothing better for the air of the room than a continual spray of *turpentine* and *eucalyptus* from a steam atomizer. If of the laryngeal type, it is well to keep lime continually slaking in the room. Have the bowels move at least once a day, but always by enema, never by a laxative. Let the throat be kept clear by a gargle or spray of one part *alcohol* and two of water, or *listerine*, or a mild *permanganate of potash* solution may be used, but not *peroxide of hydrogen*. I believe the so-called solvents have destroyed more than they have saved. They have loosened the membrane, without destroying it, thereby spreading the infection.

The range of remedies is still few, and I would only mention *apis*, *arsenicum*, *belladonna*, *bromine*, *kali bichromicum*, *mercurius biniodide*, *protoiodide*, and *cyanuret*, *phytolacca*, *lachesis*, and *anti-toxine*.

Beef marrow spread upon bread in the place of butter is one of the most satisfactory foods in the anæmia following diphtheria. In post-diphtheritic paralysis, *strychina* and faradism may one or both be helpful.

In laryngeal cases the mechanical obstruction can sometimes be relieved by intubation. There is a good hope from intubation in children of five years or over, not complicated by bronchial pneumonia. Under five years the chances grow rapidly less, both on account of the smaller tube and the lessened resistance to disease. In cities intubation is usually done by specialists who have become experts, but in the country, when this may be impossible, the practitioner should own an intubating set, and study its use. Nothing should deter him from attempting intubation in a case demanding it, and when he cannot summon assistance. At first attempt he may find it difficult to accomplish, but with a cool head and careful persistence, many lives may be saved. If the intubation is unsuccessful in relieving the stenosis, and bronchial complication has not obtained too great a hold, tracheotomy should be performed.

Prophylaxis and Immunity.—During the last year the theory of *Immunity* and the consequent treatment of diphtheria by *anti-toxine* has been widely discussed and has ardent supporters and defamers. The time has not come for an authoritative decision upon the merits of either remedy or theory. The country has been flooded with hastily prepared *anti-toxine.* We know but little of its purity or of its manufacturers. The theory that a small dose of the poison inducing the disease may set in action some function, probably of the blood corpuscles, which in turn will produce in the blood serum itself a substance which is inimical to the disease-producing product, is the story of *Immunity.* It certainly has in

it a touch of *similia*, and should claim the attention and honest study of the homœopathic school.

It is unnecessary to state here the methods of using *anti-toxine*, or the dose of the same, for the country is flooded with information of this character.

If the theory of *Immunity* should prove true, prophylaxis, for a limited time at least, is certain by the use of *anti-toxine*; but we are not justified in using it for this purpose until we are more sure of its quality and its action. Among our own remedies it is well to try *belladonna* or one of the *mercuries*, but as yet isolation must be our great dependence.

Disinfection.—Disinfection, as ordinarily carried out, is absolutely inert. Wherever *bichloride* solution is used, let one thing be borne in mind: it must remain in contact with whatever substance it is proposed to sterilize, from twenty minutes upwards; that its action upon germs or infectious tissue is absolutely chemical, and that after the chemical action has used up the *mercury* in the formation of *albuminate of mercury*, the solution is inert. We should also remember that in fumigation with *sulphur* it is absolutely without result, except there be at the same time steam, or free vapor in the room, which leads us to the conclusion that everything should be destroyed that is possible, and everything undestroyed should be sterilized by boiling water, where that is possible. Nothing should be left to *sulphur* and the *bichloride* solution except those things that it is impracticable to treat by the above methods.

Future Promise.—Six weeks after convalescence I have taken germs from the throat of a child. These

are the cases that carry infection to others. If every case could be studied bacteriologically, and no case of sore throat allowed to mingle with other children until bacteriological examination showed it to be entirely free from the Loeffler bacillus, we would be able, in a short time, to eradicate diphtheria from the country. We have paid too much attention to fumigating and disinfecting houses and too little to sterilizing our patients.

In the light of experience, I believe I am warranted in stating positively that with proper fumigation of the house and surroundings, and complete isolation of the patient until the germ has absolutely disappeared from the mucosa, we may make every case of diphtheria an isolated one.

SCARLET FEVER is probably a specific, infectious, and contagious disease. Normally—if we may use such a term in connection with any disease—it is probably a self-limited disease. In the light of present bacteriological studies we believe the disease to be caused by a specific germ, but this is at present a theory, and not an authenticated fact. Although much search has been made, a specific germ has as yet never been isolated and determined. The only germs that have been isolated in cases of scarlet fever have been the Klebs-Loeffler bacilli and the strepto and staphylo-cocci. Their influence upon the disease I will consider more fully in a proper place. The disease is supposed by many to be prevalent among some animals, especially the cow. This, however, is not positively settled. An attempt has been made by

one or two observers to inoculate with serum from cows supposed to be infected with the disease, hoping thereby to secure immunity. One Stricker, of Orange, New Jersey, has made claims in this direction; but inasmuch as the experiments were apparently not carried out in a sufficiently decisive way, and as it is not definitely decided that cows really do suffer from scarlet fever, the results are unsatisfactory, and are only of use as a suggestion for future experimental work. The disease is very common among young children, only a small relative number escaping without scarlet fever at some time during the early years of life. The first year of life is comparatively exempt, and nursing children are considered especially exempt, and where they do contract the disease, in the experience of the writer, it has been in a very mild form. On the other hand, the second year seems to be the most susceptible year of all.

Contagion and Incubation. — Unquestionably scarlet fever is an exceedingly contagious disease, and it has been a matter of great interest to the profession, as it still is, to decide at what period of the disease it is most contagious. All writers seem to differ, according to their personal information and experience, as to what is the most dangerous period of the disease. If there is any time that more agree upon than another it is that the most contagious or infectious stage is during desquamation. Upon looking into the matter, however, we find that this seems to be naught but a theory, and with very little to give it a foot-hold. One can but be inclined to feel that the simple fact that desquamation is going on, and that its

results are necessarily more or less scattered and disseminated, is the reason why it has been generally believed that there must also be scattered and disseminated the contagion of the disease. There is absolutely nothing to prove this, and there are a good many things to throw doubt upon the theory. The very facts that the disease seems to spend a great deal of its force upon the throat and general mucosa, and that these are the parts in nearly all cases where we know the truth, which are more susceptible to infection than others, and as we know it to be a general and constitutional disease, these facts, we may repeat, would at least give us fair reasons for turning our search for the original cause of contagion to the buccal cavity or the throat. But as this is nothing but a theory, and as anything that I can write would be but the suggestions of individuals, without any valid proof, it is hardly worth while to spend any further time upon this subject at present. Without regard to what the *contagium vivum* may be, we know that this disease is violently infectious, and that the germ, if it be a germ, is long lived and hard of destruction. We know that for sterilization by heat it requires a very high temperature, and that for sterilization by chemicals it requires long contact. Cases are on record—in fact, innumerable cases—where infection has been traced from rooms, clothing, etc., that had not been exposed to the scarlet fever contagion for many months, or even years. The period of incubation is variously estimated, but is usually from three to six days. It may be longer, and cases have been recorded where it was definitely known that the stage of incubation did not exceed six hours.

Pathology.—The pathology of the disease, so far as I can learn, seems to depend largely upon the effects of the strepto and staphylo-cocci. Of course we have, peculiar to the disease itself, the destruction of the superficial layers of the skin, and a high grade of inflammation in the throat, which may go on to a suppurative or gangrenous condition; but I believe that it is probably true that the milder types of inflammation of the throat, the hyperæmic and possibly catarrhal condition of the kidneys, and the destruction of the portion of the skin surface mentioned, may be largely attributed to the specific disease, whereas more severe affections of the throat and the numerous *sequellæ*, as parotitis and the suppuration of the glands, are results entirely of the cocci, which become associated with the disease, and yet cannot legitimately be considered a part of the disease. That an impoverishment of the blood does sometimes take place we know; but whether this is due to the disease proper, or its associated infections, no one has ever been able to demonstrate.

Clinical Course.—Scarlet fever is usually ushered in very suddenly by fever, occasionally preceded by a more or less severe chill, and, in a large percentage of cases, accompanied by vomiting. At this very earliest stage it probably has been many times mistaken for a bilious attack. Within from twenty-four to thirty-six hours the rash begins to appear, first about the neck and upper part of the chest. From thence it spreads over the body and extremities, but is rarely marked much on the face. The rash usually completes its development from the third

to the fourth day, gradually begins to fade, and from the sixth to the ninth day has disappeared, and desquamation is established. The initial temperature may vary from 101 or 102 to 107 degrees F., according to the malignancy of the attack. It rarely abates much until the eruption is fully established and begins to fade. With the completion of the fading of the eruption and the establishment of desquamation the temperature rapidly returns to normal. Accompanying the high temperature and eruption we have an inflamed throat, and a tongue which is coated white, showing through the white the little red papillæ; from the fourth to the fifth day the tongue loses its white coating, becomes red and rather angry looking, and is known as the strawberry tongue. The anomalies in the development of the disease are excessively high temperature, tardy eruption, and rapidly malignant throat affections. If the temperature is exceedingly high, the rash may be tardy of eruption and convulsions or coma may ensue, or the malignancy of the disease may be such that the eruption may become exceedingly dark and confluent, and ecchymoses may appear on different parts of the body. Normally the eruption consists of fine red points, which in a well developed case are so close together as to give at first the appearance of a uniform redness. The eruption may present, according to the case, all shades of color, from a light, innocent color, to the dark, even almost bluish eruption of the malignant type. The desquamation, which begins on the fading of the eruption, lasts from two to four weeks, and is the normal completion of the disease.

Complications and Sequelæ.—The most common complication is the malignant type of throat affection, which we often find in this disease. I think the typical throat which belongs to scarlet fever begins with the earliest development of the disease, and in its course and alleviation follows out the same course as the eruption; but in many cases I have noted at the close of the fourth or beginning of the fifth day, when the fever had begun to abate, the temperature would suddenly rise again, the throat would become covered with a pseudo membrane, the cervical glands become much swollen, and we would have to combat a throat, and septic condition, much resembling diphtheria. In describing the throat of diphtheria in a malignant posterior nasal and pharyngeal case, we would describe the condition which obtains here. However, we do not always find the Klebs-Loeffler bacillus in these cases. In fact, only in a very small percentage of cases. Usually the bacteriologist finds only the pyogenic cocci to which he can attribute the condition.

Acute parenchymatous nephritis is a common complication and a frequent *sequela.* Some claim that it is always a part of the disease. It is a reasonable supposition that it is often the *sequela* of cases so mild as to have been unrecognized, and to have been considered nothing but mild attacks of feverishness until slight desquamation ensued and the symptoms of nephritis obtained. If this complication becomes marked during the course of the disease, we may have uræmia and convulsions as a result; but if it is a *sequela*, we have more to protect our patient from a resulting chronic nephritis.

Otitis is a common complication, and undoubtedly the result of infection by the pyogenic germs through the eustachian tube, extending from the throat to the middle ear.

Synovitis.—Occasionally synovitis may occur, and if any symptoms of this affection be present, they must be very carefully and persistently combated, or we are quite liable to have a deformity of some joint.

Affections of the **liver** and **spleen** have been noted, but are not commonly of great importance.

Bowels.—A catarrhal condition of the bowels is not infrequently induced, and when it does obtain, sometimes results in a rather intractable entero-colitis.

Anæmia and nervous affections, as **chorea** and **epilepsy,** are at times attributed to this disease, but under modern care and treatment I believe them very rare.

Diagnosis.—The diagnosis of this disease, if well developed, can hardly be mistaken. The only cases where doubt can occur are where a hyperpyrexia is so great that the patient succumbs in a condition of coma or convulsions, before the rash appears. The only possible diagnosis in such a case must be the probabilities arising from a surrounding epidemic. It might possibly be mistaken for diphtheria in a malignant case, but the rash would probably obviate this, and if it did not, the disease and treatment of the same is so similar, that it would not result in any very grave error. In the mild cases arise the greatest difficulties of diagnosis. Many times it is wholly impossible to positively diagnose a case of mild scarlet fever until the resulting desquamation or al-

buminuria. This being unquestionably true, we should take great care in the isolation of suspicious cases, and equally great care in abstaining from criticism of cases which our colleagues may seem to have overlooked, and in whose position we might have been equally and excusably remiss.

Prognosis.—The prognosis of a normal, moderately severe case of scarlet fever, with good nursing, is good. The prognosis in malignant cases is bad. In irregular cases it is uncertain. If we pass the first days of the eruption without malignancy, we may give a good prognosis, unless by the fifth day a serious throat complication is developed. If such should occur I believe that the prognosis should be the same as in a case of diphtheria of apparently similar severity. The various complications should rarely occur under homœopathic treatment, and if they do, in most cases it should be possible for us to avoid serious results.

Treatment.—First and foremost comes isolation, which should be complete, and of long duration. Not less than six weeks. In hyperpyrexia hot baths may be used, and if this is unsuccessful a bath of 100 degrees F., the temperature being gradually decreased to from 65 to 75 degrees. This treatment is advised by many of the best authorities, although the impression of the writer, after a reasonably large experience, would lead him to believe that better results will be obtained from adhering to the administration of the indicated homœopathic remedies. This must of course be left to the judgment of each practitioner. Frequent tepid sponge baths of one part *alcohol* to four

or five of water are very comforting to the patient, and seem to alleviate the restlessness. During desquamation, as a matter of prevention of contagion, and also of protection of the skin surface, we know of no better method at present than the rubbing of the child daily in a carbolized *olive oil*. The diet should be liquid until convalescence is thoroughly established, and I would recommend milk, *Mellin's Food*, and unfermented grape juice. For the local treatment of the throat I can commend nothing better than the same treatment I would give for a similar case of diphtheria, for which I refer you to the paper on that subject. (See page 245.)

Remedies.—For remedies I would mention *ailanthus*, *ammonium carbonicum*, *apis mellifica*, *arsenicum*, *arum triphyllum*, *belladonna*, *calcarea carbonica*, *camphora*, *carbolic acid*, *cuprum*, *digitalis*, *gelsemium*, *helleborus*, *hepar*, *hyoscyamus*, *muriatic acid*, *nitric acid*, *phytolacca*, *sulphur*, *veratrum viride*, and *zincum*.

It is wise to give the child freely of water. I believe distilled water is the best. Unquestionably this may help obviate the tendency to nephritis.

Prophylaxis.—For many years our profession has discussed *pro* and *con* the question of prophylaxis in scarlet fever. Some have claimed *belladonna* to be of great benefit; others have ridiculed it. For nearly seven years the writer has had under his charge an orphanage in which the number of orphans has averaged seventy-five. On three different occasions during that time I have had scarlet fever break out in the institution. The first outbreak with one case, the second with two cases. I immediately put every

child in the institution upon three doses of *belladonna* a day. No other cases followed. I have but once in my practice known a case of scarlet fever to ensue after the administration of *belladonna*, and that case was very mild in character. This is but a straw, but it is well worth consideration.

Disinfection.—I would refer the readers to the article upon diphtheria for what I have to say upon disinfectants. (See page 248.) I could only repeat exactly the same things, and I believe that comprises in a few words the present status of disinfection, fumigation, and sterilization.

Future Promise.—Scarlet fever, like diphtheria, is an avoidable disease, and every case of avoidable disease that occurs is the fault, innocently or guiltily, of someone. We have boards of health and quarantine laws galore. We have also people who are solicitous for the welfare of their *own* children; but we lack, as a people, that realization of our duty toward others that would make it possible, or might make it possible, to entirely eradicate such diseases as scarlet fever. If, while at the same time that we make quarantine laws, we spend a good deal of time in teaching our people, not in a public way, resulting in personal advertisements in the press, but in a quiet, earnest, and honest argumentative work among our patients and our colleagues, we can lead them to see and understand the objects of quarantine, and the best methods of carrying it out and the absolute necessity of complete isolation of contagious cases, so that it may be possible for us to make every case of scarlet fever, as of diphtheria, an isolated one, and in a few years it may be made so rare a disease that its chief interest will be in its history.

CHAPTER XIII.

TYPHOID AND REMITTENT (MALARIAL) FEVER.

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In General.—Typhoid and remittent fever play so important a part in the practice of the general practitioner, and every physician who has them to deal with is so familiar with their every phase, that a consideration of them in this connection seems almost superfluous. No attempt, therefore, will be made to treat the subject exhaustively, but only a few observations will be offered which every physician who practices in a malarial locality has doubtlessly made for himself.

Pathology.—We seriously question whether typhoid and remittent fever deserve a place in a work devoted exclusively to diseases of children. As a matter of fact we know that they are much more common among adults, to which we would add that remittent fever is relatively more common in either case. It is a well known fact that the agminated glands which are the seat of the specific lesion of typhoid fever are undeveloped during the early years

of life, and for this reason we are told that it is not until about the fifteenth year that age becomes a predisposing cause of typhoid, the years between fifteen and twenty-five being those in which the disease most frequently occurs. We would throw out a thought in this connection which has frequently occurred to us in the study of typhoid fever.

Jacobi says: "The groups called Peyer's patches are very imperfect in children—so much so that they are not liable to disease; and typhoid fever, in which they are invariably inflamed, is extremely rare in children." Is the inflammation of Peyer's patches the *sine qua non* of typhoid? If not, how does their imperfect development in early life account for the infrequency of typhoid during these years? We understand that typhoid is a specific systemic infection in which the *blood* is the first tissue affected, the lesions in the intestines and elsewhere being secondary to the blood changes.

Loomis says: "As soon as the disease is fully established a change in the blood occurs. In connection with these blood changes, a series of changes take place in those organs and tissues of the body in which the process of waste and repair are most rapidly going on." If this be correct, how can the condition of Peyer's patches in the child play any part in his seeming immunity from typhoid fever?

We do not believe at any rate that typhoid and remittent fever in the child differ in any way from the same disease in the adult, and in the following pages they will be considered in the abstract without reference to age.

Diagnosis.—In the study of the peritoneum we are taught as students to trace the two layers, anterior and posterior, together, following them from the un-under surface of the diaphragm to the upper surface of the liver, around the liver in front and behind, down to the stomach and around it in front and behind, down in front of the intestines and back again to form the greater omentum, and thence to the transverse colon, where the two layers part company, the one going up and the other down. Typhoid and remittent fever follow in many respects so nearly the same clinical course that it occurs to us that they, like the two layers of the peritoneum, may well be studied together, the points where they differ only serving to emphasize their resemblance throughout the rest of their course.

To the mind of the physician, who practices in a malarial locality, almost the first question that presents itself in connection with a case of continued fever is "Is it typhoid or remittent?" To those who practice in localities free from malaria, where typhoids pursue a typical course, this question may seem an ignorant one. Our text-books draw such easy lines for diagnosis between typhoid and remittent that one should feel almost ashamed to confess that he was not quite certain of his case, especially when he has had it under observation from the beginning.

In malarial climates we see but few typical typhoids, and the possibility of the fever being remittent often makes the diagnosis not only difficult, but sometimes almost impossible. The writer has had cases which he has seen twice daily from start to finish, in which,

even after convalescence was thoroughly established, he was unable to say positively whether it had been typhoid or remittent. A case in point might be mentioned—that of a lady, for example, whose fever ran four weeks, the temperature curve being characteristic of neither typhoid or remittent. There was nothing positive about the appearance of the tongue. The condition of the bowels was not suggestive. There was no eruption; no somnolence or delirium. There was but little exhaustion and emaciation. One day we diagnosed the case typhoid, only to change to remittent the next, and after convalescence was established, in the fifth week, we were as uncertain of our diagnosis as at any time during the course of the case. Upon the first departure from a strictly liquid diet, several days after the temperature had become normal, intestinal hemorrhages occurred, and the patient had a *relapse*. The diagnosis was, alas! finally clear. The Peyer's patches were involved. It was typhoid.

In our work at the city hospital, where the cases of continued fever come in usually after they have run a week or longer, it is sometimes with the greatest difficulty that we can diagnose between a mild case of typhoid and a severe case of remittent fever. In such cases we are frequently assisted in clearing up the diagnosis by cautiously feeding the patient a little solid food, a dry cracker for instance. If the case be typhoid, a rise in temperature almost immediately follows, owing to the irritation of the inflamed agminated patches, whereas no exacerbation occurs if it be a case of remittent fever.

It is claimed by some writers that the diagnosis of typhoid cannot be made with positiveness unless there be the typical temperature range and the eruption. If that be the case, we have but little, if any, typhoid in the location where the writer lives. We seldom even look for the eruption, nor do we consider a departure from the classical temperature range incompatible with a diagnosis of typhoid. Our typhoids are typho-malarial, in which the typical evening rise of temperature is exaggerated by the malarial complication. In making our diagnosis we must depend upon the general *en semble* of the case, which is usually characteristic enough for the purpose of differentiation. The dry brown tongue, the tender and tympanitic abdomen, the delirium, the emaciation and prostration carry us away from remittent fever and into typhoid; and yet these features are frequently so indistinct in a mild case of typhoid, and are so frequently present in a severe case of remittent, that it is difficult to make the diagnosis.

However much typhoid and remittent fever may seem to overlap in their general appearance, they are etiologically and pathologically quite separate and distinct. We have before us a recent work on pediatrics in which "infantile typhoid fever" and "infantile remittent fever" are mentioned as synonyms. We are not at all in sympathy with this classification. Aside from the fact that we do not consider infantile typhoid and infantile remittent as distinct types, we are certain that etiology and pathology carry the two fevers away from each other, no matter how closely their clinical course and therapeutics may approach.

Treatment.—The treatment of typhoid fever and remittent fever have so much in common that it must be quite a consolation to the physician who is in doubt of his diagnosis. In a doubtful case the patient will of course be placed on liquid diet, which should be rigidly adhered to as long as any doubt exists. The therapeutics of the two fevers is definite, and the writer would not go into a tiresome detail of all of the remedies which have stood the test of repeated trials. Every physician has these remedies and their indications at his finger ends. In this article only two remedies will be mentioned, which from their service in both typhoid and remittent are absolutely indispensable to the physician who practices where malaria abounds. They are *gelsemium* and *arsenicum*.

Gelsemium is one of our very best remedies in the first days of typhoid, especially typho-malaria, and in mild cases is often the only remedy needed throughout; in remittent fever it is the remedy *par excellence*. In hospital practice the writer has learned to place the utmost confidence in *gelsemium*. After trying other remedies, he has come to the conclusion that no other remedy acts half so well in remittent fever. Other cases, similar in every respect, treated homœopathically with other remedies as they seemed indicated from day to day did not recover so promptly as those kept on *gelsemium* throughout. The more nearly the symptoms of a mild case of typhoid approach remittent fever the better is *gelsemium* indicated.

In either typhoid or remittent fever, where the

intoxication of the system is too profound for *gelsemium*, as shown by persistency of the fever or by great exhaustion, *arsenicum* takes the place occupied by the former remedy in the treatment of the milder forms. Persistent temperature or progressing adynamia are the indications that should lead to the substitution of *arsenicum* for *gelsemium*. We believe that the pathology of typhoid and remittent fever support the selection of these two remedies. In either case we have an intoxication of the system by a specific infection; the whole system is infected, and then in typhoid fever the specific lesions appear in the intestines; but we do not understand that the course of typhoid is determined by the extent of these lesions. In other words, the intestinal changes do not constitute the pathology of typhoid; that is rather the changes in the blood just as in the case of the malarial fevers, remittent or intermittent.

In the *gelsemium* case of either typhoid or remittent fever the poison spends its force on the circulatory centers, and we have that relaxation without much emaciation which is common in a mild case of either fever. In the *arsenicum* case the poison attacks the nerve centers, and we have that intense prostration and emaciation which indicate that the very centers of organic life have been seriously affected. We say that although the etiology of the two fevers differ, and although we have specific lesions in the one fever and none in the other, yet the same centers are attacked and in very much the same way by both poisons. If this reasoning be correct the two remedies mentioned are as homœopathic to typhoid as to remittent fever. In prescribing upon the pathology of the case we must not be misled by the fact that the etiologies differ.

CHAPTER XIV.

ORTHOPEDIC SURGERY.

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General Considerations. — Orthopedic surgery deals with the deformities of the body, their prevention and their cure. The frequency of such deformities among children renders orthopedics quite as much an integral part of pediatrics as of general surgery. The nature of a book of this description sets its own limitations. These must excuse to the hypercritical the conciseness of expression. Historical references are purposely omitted, and no space will be lost in the *discussion* of the comparative value of methods. The author prefers to describe those only which have proved satisfactory in his own experience. Classifications are unsatisfactory and misleading, except to their authors; each subject will therefore be treated under its own special heading.

Diagnosis.—In no department of medicine or surgery is diagnosis of greater importance. Diagnosis is the essential element of satisfactory treatment and correct prognosis. This means diagnosis in its broadest sense and includes, first, the recognition of causes

both predisposing and exciting; second, the exact recognition of the *structures* involved and their *normal* anatomy and physiology; third, the knowledge of the ways in which their present condition differs from the normal. These are the essential factors of success, mechanics will do the rest. It is not necessary to enter into a description of the many instruments and appliances now used by specialists in this branch of surgery as aids in accurate diagnosis and examination; for these, larger works must be consulted.

Causes.—The proper discussion of *general causes* is more easy if we make a division of deformities into the *congenital* and the *acquired.*

1. Heredity.—Though playing a far less important part than was formerly supposed, heredity cannot be entirely disregarded. Many instances of *family* deformities have been reported; club feet, supernumerary digits, and congenital dislocations being especially common.

2. Maternal Impressions.—Though imperfectly understood, "marked" children, as the result of fright during early pregnancy, are not unknown.

3. Faulty Development.—This may be a primary defect in formation, or it may be a secondary interference in the development of a normally formed fœtus, through loups in the umbilical cord, or from abnormal intra-uterine pressure, either from a faulty position of the fœtus, or from too limited a supply of amniotic fluid.

4. Injuries or Diseases.—During intra-uterine life, fractures from external traumatism with union in an abnormal position are not infrequent. Rhachitis is

regarded as the disease most commonly accountable for deformities during intra-uterine life.

The Acquired.—1. Pressure Effects.—Some cases of nearly every acquired deformity may be traced to *unequal* pressure during active growth. The growth being normally active where not subjected to undue pressure, and very slow if not actually arrested where the pressure is very great. The effect is an asymetrical development, whether arising from an unequal length of the limbs, from habits of standing or sitting in bent or slouchy positions, or from paralysis of one group with contraction of the opposing group of muscles.

2. Injuries.—Fractures improperly set and cared for; dislocations unrecognized and consequently unreduced; nerve injuries resulting in paralysis.

3. Diseases.—Joint diseases of an inflammatory nature resulting in ankylosis in faulty position. Large destruction of soft tissues with the consequent *cicatricial* contractions. Central or peripheral nerve lesions insufficient to produce complete paralysis may cause either spasm or atrophy of muscles or ankylosis of joints. Certain muscular contractions are without doubt also caused by reflex nerve irritation.

Symptoms and Pathology.—As the symptoms are usually mainly *objective*, a general consideration is uncalled for. The symptomatology will be considered with each special deformity in the proper place. In general pathology there are a few points which cannot be too strongly emphasized. Too much stress has been laid upon muscles and tendons as the main factors in the causation and perpetuation of deformi-

ties. The fact is that no matter how great a part these structures may play in the causation of deformity, the real obstacle to be overcome in most deformities of the trunk and limbs is an alteration in the shape or in the relationship of the bones themselves. Rational treatment must be based upon a clear recognition of causation and pathology.

General Treatment.—The key-note to success in the majority of cases may be summed up in the words *equalization of pressure.* To attain this end many varieties of methods must be employed either alone or in combination. Nothing is more certain than this: No one method of treatment will be found suitable for all cases. Constitutional treatment is in many cases quite as essential as the local. It should include careful attention to hygienic surroundings, diet, and habits, physical culture in general, and of the involved parts where necessary. This latter should include passive movements, massage and electricity when called for, and postural treatment must not be overlooked. It would be manifestly impossible to even *name* the variety of mechanical agents used in the correction of these orthopedic cases. Those which are especially useful will receive due consideration.

Orthopedic Operations.—The number of operations for the correction of deformities and their causative diseases has been steadily increasing since the advent of the antiseptic methods. The success met with is very gratifying; enough so at times to endanger a loss of sight of the less brilliant, though in some respects the more satisfactory, methods of man-

ual correction and elastic traction. It is only necessary here to mention the more common ones; tenotomy, myotomy, osteotomy, simple and cuneiform, chondrectomy, and excision. They will each be described as fully as necessary in the cases where they may be found not only useful but necessary.

TORTICOLLIS.—Torticollis, or wry neck, is a deformity produced by a contraction of the sterno-cleido-mastoid muscle.

Causes.—Some authors describe a congenital form due either to injury at birth or to malposition in utero. Those usually seen are acquired and may be the result of holding the head too long in this faulty position owing to cold or rheumatism, to irritation of the spinal accessory nerve by growing tumors or from central disease, or it may follow cicatricial contractions following injuries to the sterno-mastoid muscle itself.

Symptoms.—The head is drawn forward and toward the diseased or injured side, but rotated so that the chin points to the opposite shoulder. In cases of long duration there is usually a lateral deviation of the spine in the cervical region, the convexity being to the opposite side. When very pronounced there will naturally follow a compensatory dorsal curve with the convexity toward the diseased side.

Treatment.—This must, of course, depend upon the causation. In the congenital form, unless it be due to spastic contraction from central disease, massage and kneading the involved muscle will generally bring about a satisfactory result in a few weeks. The rubbing must be thorough and the head held in

proper position for some minutes after each treatment. In bad cases, after correction, it may become necessary either to apply a starch or plaster bandage, or to use the elastic traction as described below. If not treated early, myotomy may be demanded. The acquired form, if resulting from cold, will usually respond readily to heat, massage, and the indicated remedy—most frequently *bryonia*, *ferrum phosphoricum*, *arnica*, and *rhus toxicodendron*. If resulting from local nerve irritation, the cause of pressure, the developing glands or tumors, should be excised. If the nerve irritation is central, nerve stretching may be first tried, and this failing, the excision of a portion of the nerve just before it enters the anterior portion of the sterno-mastoid is advisable. This point is one inch below the tip of the mastoid, and the nerve is readily reached by an oblique incision along the anterior border of the muscle.

Cases due to cicatricial contraction may be treated by kneading and stretching or by plastic operations. Myotomy is called for only in such cases where the muscle has undergone so pronounced an adaptive shortening that the massage and stretching have utterly failed. The muscle should be divided by preference through an *open* incision just above the clavicle. This is far less dangerous in these antiseptic days than subcutaneous surgery. After the section, and the wound has been properly dressed, the head may be retained in position by a plaster of Paris bandage. Should subsequent elastic traction be required, the apparatus of Sayre is, in my judgment, the simplest and most satisfactory. It consists of a

rubber band which is attached to a piece of plaster around the forehead and to a band around the opposite shoulder.

SCOLIOSIS.—Scoliosis, or lateral curvature, is a deformity in which there is a deviation of the spinal column in a lateral direction. It is the most common of all orthopedic diseases, and most frequent between the ages of eight and fifteen years.

Causes.—The causes may be considered under the following headings: First, rhachitic; second, static; third, pathological. By far the greater number of these cases belong to some of the diatheses, and rhachitis is unquestionably the most important. Rhachitic curvatures are seen most frequently during the first two years of life, and are usually due to the habit on the part of the mother of holding the child nearly always in one arm. By *static* causes we mean pressure effects, and in truth all cases are static; *i. e.*, whatever may seem to be the starting point of the disease, the deformity is always because of *inequality of pressure.* Under this heading comes *habitual* deviations, as from writing at a desk which is too high and necessitates raising the shoulder; tilting of the pelvis, either from an unequal length of the legs, or from the habit of standing a great share of the time upon one leg, etc. Pathological scolioses are not very common. Those most frequently seen are from empyema and due to the contraction of the bands of adhesion, and faulty expansions of the chest. Others are due to diseased conditions of the bones or articulations of the spine (usually tuberculous and associated with

kyphosis) and also to cicatricial contraction following extensive destruction of soft tissue.

Pathology.—After the deformity has once begun, its perpetuation and increase are due to pressure effects. The bones develop rapidly where the pressure is least and are prevented in their growth, and in some cases even atrophy, in parts where pressure is unusually great. As a result we have the vertebræ becoming wedge-shaped, the base of the wedge being on the convex, and the apex on the concave side of the column. The intervertebral discs are similarly affected. With these there is a rotation of the vertebræ upon each other, the bodies turning toward the convexity, the spines toward the concavity. The rotation is at times so pronounced that in mild curvatures the spines seem hardly to deviate from their normal relation to each other, and hence the unreliability of this symptom in diagnosis. Consequent upon the rotation of the spine there are the characteristic changes in the conformation of the thorax due to alteration in position and shape of the ribs attached to the involved portion. The ribs on the convex side are carried backward and the intercostal spaces widened. This gives a pronounced bulging of this side of the thoracic wall behind and a corresponding depression in front. On the concave side the opposite condition obtains, the ribs being carried forward and approximated. The typical oblique thorax is the result, the cavity on the convex side being pronouncedly diminished in all directions, the concave side being diminished only in the longitudinal direction. The changes in the muscles and

ligaments are in the main an adaptive shortening on the concave side and a stretching and thinning of those on the convex side.

Symptoms and Diagnosis.—These of course depend upon the location of the curve and upon its extent. In rhachitic cases in infants the symptoms are all objective. The curve is usually a dorso-lumbar one, the convexity being left or right as the mother holds the child mostly on the left or right arm. In older children we have a more interesting study. They may complain of a general weariness or tired feeling for some weeks before any spinal trouble is suspected. The first symptoms which usually alarms the mother is an undue prominence of either the shoulder or the hip, depending upon whether the primary curve be a dorsal or a lumbar convexity. In either case a compensatory curve with an opposite convexity usually follows within a few weeks. Most authors assert that the right dorsal convexity is by far the more frequent. My own observation leads to the belief that the left lumbar convexity is more common than usually admitted. It is of the utmost importance to the intelligent treatment of the case that the surgeon do not rest satisfied with running his finger along the spine and a diagnosis of scoliosis—to recognize *the* PRIMARY CURVE *is imperative*. There is an asymetry of the sides of the body in both, but the following differences will be noted upon careful examination: The patients should always be stripped if possible, and if not, one thin garment only should be supported by a band around the pelvis just above the great trochanters, thus exposing the waist line and

the iliac crest. In primary dorsal convexity, the patient standing erect with the heels together, the arms hanging naturally, the upper part of the body seems to have been shifted to the right, the right shoulder is elevated, its scapula prominent, the right arm hangs at the side one or two inches away from the body even at the crest of the ilium. The waist line is markedly deepened, the right hip being unduly prominent. The left arm hangs close to the body, the normal waist line assuming an elongated, semi-lunar curve from the iliac crest to the axilla.

In the primary left lumbar convexity, the left waist line appears shallower and even at times obliterated, the arm hanging almost or quite in contact with the trunk. On the right side the waist line is considerably deepened and opens at a more acute angle. The hip becomes more prominent, so that the arm presses closely against instead of hanging at a distance, as in the primary dorsal curve.

Prognosis.—This depends upon the stage at which the patient applies for help and the *cause* of the deformity. In general, we may say that those cases where suspension overcomes the deformity and the cause can be removed or counteracted, will get well. Where suspension only partly overcomes the displacement some improvement may be promised but where the deformity is *fixed* and particularly in aggravated cases all a surgeon can do is to prevent greater deformity and at times even this is impossible.

Treatment.—The proper treatment depends entirely upon a correct diagnosis. Those who treat all cases of scoliosis alike cannot hope for uniformly good

results. In no other cases is equalization of pressure so important. In the rhachitic curves of infants and young children suspension and the application of a plaster of Paris cast will be all that is necessary. The primary lumbar curvatures are usually due to *habit* or an unequal length of the legs, and, unless of very long duration and marked compensatory curves have taken place, can usually be corrected by elevating the foot of the convex side. This may be done by a cork sole of sufficient thickness to overcome the deformity and should be worn constantly in cases due to unequal legs and as long as necessary in *habit* cases. When aggravated compensatory curvatures have taken place the braces recommended for the dorsal curves must also be used, the patient being placed upon those muscular exercises which tend to improve the general health as well as to strengthen the spinal muscles. Primary dorsal convexities are equally amenable to treatment in the earliest stages, when due to the assumption of faulty positions and abnormal growth in consequence. Such cases, when occurring in children up to ten or twelve years of age, where suspension entirely remedies the defect, are most satisfactorily treated with plaster of Paris casts. In older children, and in more aggravated forms, the application of a Taylor or Stillman brace will be followed by the best results. The suspension belt, the rotary and ring exercises, the oblique seat, and the daily attempts at moderate manual correction are valuable adjuvants. The treatment of the pathological curvature must of course depend upon the conditions, and space forbids their consideration.

POTT'S DISEASE.—Pott's disease, or spinal caries, has been definitely proven to be in the majority of cases a tubercular inflammation affecting the bodies of the vertebræ.

Causes.—These we may divide into the predisposing and the exciting. The predisposition must always be regarded as a lessened power of resistance on the part of the tissues. This may be hereditary or acquired. In either case it simply means that the tissues furnish a suitable soil for the development of micro-organisms. In the acquired form the diseases which most frequently render the little patients susceptible to this disease are measles, whooping-cough, and chronic gastro-enteric diseases. They all leave them poorly nourished and with catarrhal conditions which favor the entrance into the system of floating germs. The exciting cause is the bacillus tuberculosis, which gains entrance usually through the respiratory mucous membrane. The localization in bone is nearly always secondary, the primary focus being commonly either in the lung tissue or in the bronchial glands.

Pathology.—Given the weakly child, given the micro-organisms in the circulation, given the tendency of the child to injuries and exposure which produce such marked circulatory changes, and we have a chain of evidence which may easily account for the beginning of the disease. The localization takes part usually in the rapidly growing layer of the body near the intervertebral cartilages. As the micro-organisms develop, their influence converts the infected cells into lymphoid corpuscles of consider-

able size, and in Nature's method of circumscribing a foreign body these cells are surrounded by exuded white corpuscles and newly formed connective tissue cells which are distributed circularly around the cells primarily affected. The nearest of these become infected by the rapidly multiplying germs and are soon converted into rings of lymphoid cells, the central one meanwhile enlarging and becoming the typical giant cell. Other tubercles form in the same way, and ultimately we have a well defined tubercular lesion, in the form of typical granulation tissue. The secondary changes which this tubercular tissue may undergo are four: First, fibroid induration; second, caseation; third, pus formation; fourth, calcification.

Fibroid induration really means that the tissues have overcome the disease and have converted a focus into a mass of healthy granulation tissue which later becomes organized into fibrous tissue. Caseation is really a fatty degeneration of the cells, due in part to a cutting off of the nourishment by the dense infiltration of round cells and in part to the direct action of the micro-organisms and their ptomaines. When the nourishment brought to the part is insufficient to supply the germs, they die, the mass undergoes the cheesy degeneration, which is walled in by the conversion of the round cells into granulation tissue. Thus a tubercular focus may be effectually circumscribed and remain dormant for months or even years. Pus formation does not mean that secondary infection with pus microbes has taken place. It is simply the same process described as caseation, only that the degeneration occurs so rap-

idly that the fluid parts of the degenerated tissues are not absorbed, but form, with the cells and particles of fibrin, an emulsion which is termed tuberculous pus. Calcification is a deposit of lime salts in an already caseating focus.

The deformity is produced by a sinking in of the anterior segment of the diseased vertebræ, when so much of the bodies are destroyed that they can no longer bear the weight of the superimposed parts. The intervertebral cartilages, the periosteum, and even the ligaments are involved in the later stages. As the anterior parts sink the spines project and produce the characteristic kyphosis. This is usually a gradually increasing deformity, but in extensive degenerations a fall upon the feet or buttocks has been known to produce a sudden one. Abscess formation comes most frequently where the process is rather rapid. It is by no means a constant accompaniment of spinal caries. When pus does form it burrows in the direction of least resistance. It cannot go backward on account of the spine itself. The anterior spinal ligament is usually sufficiently thickened and strong to prevent extension forward, and its intervertebral attachments prevent easy extension downwards. The pent-up accumulation passes laterally, entering the cellular tissue at the side, and, guided by the fascias or muscle sheath, forms the post-pharyngeal, the psoas, or the lumbar abscesses, according to the location of the disease. When the disease is dorsal, counter-curves with the convexity forward occur in the cervical and lumbar regions. These compensatory curves do not take place in disease of the lumbar

region, but the body is bent forward, the degree depending upon the extent of the disease. The consequent deformity of the chest, the pigeon breast, the approximated ribs and their projection over the pelvic bones or their sinking into the iliac fossæ, are simply mechanical.

Clinical History and Symptoms.—The earliest symptoms are often obscure and may present simply as a lack of playfulness, the child becoming easily tired and wanting to lie down more than is customary. Too much stress has been laid upon tenderness to touch and pains referred to the peripheral endings of the involved nerves, as diagnostic points. The most characteristic symptom in the early stages is the rigidity of the spine. This may be tested either by lying the patient on his face and lifting him up from the bed by his feet or by asking the patient to pick up some article from the floor. In the former, if the rigidity is not complete, the movement will elicit considerable pain. In the latter the child will probably pick up the article without even bending the spine. All movements of a jolting nature are carefully avoided. With these symptoms, a careful search should be made for local tenderness for referred pains, etc. The temperature will usually be found elevated, though may be not more than from one-half to one degree. In the later stages we may have interference with motion from other causes: First, pachymeningitis; second, from compression of the cord from displacement; third, from pressure of the cord by an abscess. The first condition is the one most com-

monly seen, the inflammation may even extend beyond the membranes to the cord itself.

Prognosis.—This depends greatly upon the stage in which the disease is recognized. If seen before deformity this can usually be prevented. When the deformity is slight it may be arrested, but when very great, and especially when paralytic symptoms are present and the functions of the bladder and bowel impaired, the prognosis is very grave.

Treatment.—This may be divided into general and local. The general treatment consists essentially in nourishment, building up of nutrition. Rest in the horizontal position is the best treatment in the majority of cases before deformity is apparent. It must be carried out throroughly and for a time ranging from six weeks to as many months. The patient of course must lie on a firm mattress without a pillow and should not be allowed under any circumstances either to sit up or to get up. Even when slight deformity is present this treatment is most satisfactory and may be aided either by traction or by the suspension belt. The plaster jacket, properly applied, is perhaps the best one agent we have. Those who decry its value are the ones who do not properly apply it, and the ones who do not recognize that it does not aim at complete obliteration of an existing deformity. Its object is simply fixation and to prevent the injurious effects of pressure. It should never be applied without suspension to the extent of removing all of the deformity possible. Verbal descriptions of the many braces in use for this deformity are very unsatisfactory. For their description a larger work must

be consulted, the author simply stating his preference for those of Stillman and Banning with Sayre's jury mast attachment when necessary. Poro-plastic felt moulded over a plaster cast is a satisfactory and inexpensive method of support.

TALIPES.—Under talipes (club-foot) we will consider those deformities resulting from abnormal positions of the foot, or of its divisions, in relation to the leg or to each other.

Causes.—Talipes may be congenital or acquired. Congenital talipes is, as a rule, bilateral, and the deformity is due to alteration in the shape or position of the bones themselves. Acquired talipes is secondary in its nature and follows, in order of frequency, paralysis or muscular contractions; second, diseases of bones and joints; third, traumatism, resulting in fracture or dislocation or cicatrization during healing of abraded surfaces. There are many theories regarding the causes of congenital talipes. There is no doubt in my own mind that each of the following factors plays its important part: First—Heredity. Many families are afflicted through generations. Second—Mechanical pressure. To quote from Parker: "The feet assume different positions at different periods of intra-uterine life, and any influence that keeps them too long in any one position may be an efficient factor in producing the deformity." Third—Defective development, due to a primary disturbance in the affected bones or joints.

Symptoms.—These are subjective and require no attention.

Pathology.—We will speak more fully of the an-

atomical changes under the different varieties, but I wish to insist very strongly that the greatest change is not in the *joint*, not in the contracted fascia or tendons, but in the growth of bone in an abnormal direction. The soft tissues, fascia, muscles, and ligaments adapt themselves to altered positions, and, becoming fixed, the abnormal contractions assist in the perpetuation of the deformity, because of course the growth of the bone will take place most rapidly in the direction of the least resistance or pressure.

Let us now divide our subject and go more fully into the characteristic features of each variety. We will speak of four varieties of talipes which may occur singly, but do more commonly in combination. These are talipes equinus, talipes calcaneus, talipes varus, talipes valgus.

Talipes equinus is a deformity due to abnormal extension of the foot. The heel is drawn upward, the apex of the foot downward, without co-incident lateral deformity. The foot lies in a more or less straight line with the leg, the patient walking on the ends of the metatarsal bone, or, in aggravated cases, even upon the dorsal surface of the curved under toes. It is commonly associated with some degree of varus and shall receive attention under the heading of equino-varus. Talipes equinus is rarely, if ever, congenital. The most common causes of the acquired form are, first, paralysis of the anterior tibial muscles; second, mechanical pressure from prolonged disuse in the extended position; third, joint inflammations; fourth, traumatic contracture of muscles of calf from burns, inflammations, etc.

Symptoms.—The symptoms are unmistakable; the diagnosis easy. The degree of deformity depends largely upon the condition of the extensor muscles of the toes. When these are not paralyzed, the deformity is not extreme; when they are, the patient may even walk upon the dorsum of the foot. Examine always with the leg extended, as flexion relaxes the posterior tibial muscles and thus renders dorso-flexion more easy.

Pathology.—In modern cases the anatomical changes are those of malposition rather than alteration in shape of the bones. The astragalus is in contact with the tibia and fibula only in its posterior surface; its upper and anterior surfaces being projected forward and appearing as a marked prominence on the dorsum. The scaphoid is displaced downward and is sometimes in contact with the calcaneus. The calcaneum is lifted up and back, and at times is even in contact with the bones of the leg and dislocated from its attachment to the cuboid. New joint surfaces are formed and the exposed cartilages become absorbed. The metatarsal bones become concave on the plantar surfaces and convex on the dorsal. The dorsal ligaments are stretched, the plantar ones contracted. The hollow of the foot is markedly deepened.

Prognosis and Treatment.—In recent cases the prognosis is usually good, but in long lasting cases, especially of the paralytic variety where nutrition is at a low ebb, and especially where marked changes have occurred in the bones, prolonged treatment is necessary to accomplish even fair results. Preventive treatment should always be adopted in sickness

requiring prolonged rest in bed; exercise passive in character, and frequent change in position, is all that is necessary. In infants and in moderate cases manipulation and massage will often effect a cure. In severer cases forcible straightening under *chloroform* and with or without tenotomy of the tendo achillis and fixation with plaster of Paris cast is my favorite method of dealing with this deformity. In very mild cases, elastic or semi-elastic traction (in connection with manipulation), applied after the method of Sayre, is often helpful. I shall make no effort to describe the many forms of appliances. Their number is a sufficient guarantee of inadequacy, and they are all built upon the plan of elastic traction. Tenotomy shortens the duration of the treatment and is often demanded in cases not due to paralysis. Paralytic cases can rarely call for tenotomy, for obvious reasons. The plaster should not be applied immediately after a tenotomy. Allow the wound to heal first. Osteotomy or resection of one or more of the tarsal bones may be demanded in severe cases, and in complicated ones, section of fascias and ligaments may be needed.

Talipes varus is a deformity due to abnormal adduction and inversion of the foot. The apex of the foot is directed inward, the inner border up and the external border depressed and resting upon the ground when standing. It is the most frequent form of talipes and is most often congenital. The congenital variety is due to a primary change in the bones; the acquired is nearly always secondary to paralysis, though it may be due to trauma or disease, the changes

in the bone being due to the fact that the growth is restricted in its normal course by pressure.

Symptoms and Diagnosis.—Unless the deformity is quite marked it may not be recognized until the baby begins to walk, as slightly adducted feet are natural in infants. With the first attempts at walking, however, the external border of the foot alone touches the ground. This tendency the superimposed pressure aggravates, and as the development increases, the deformity gets worse, the bones growing in the direction where least pressure is exerted. The muscles and ligaments adapt themselves to the false position of the bone. Callosities and even bursæ may form on the external and dorsal surfaces as the result of pressure, and add greatly to the discomfort of the patient as well as to the difficulty of cure.

Pathology.—In aggravated cases the bones of the foot are all altered in shape, the most marked changes being noticed in the astragalus, calcaneum, and cuboid. It is impossible to describe fully in words the changes which occur in the shape of these bones. The astragalus becomes somewhat wedge-shaped, twisted, and curved with the concavity on the plantar and internal sides. The calcaneum is also twisted or rotated internally and becomes concaved and shortened on its inner border, and its articulations with both astragalus and cuboid are altered in direction and position. The tarsal joint is bent inward, the dorsal portion being directed forward, the sole backwards. In aggravated cases the angle formed between the foot and leg is an acute one. Marked atrophy of all the muscles takes place from disuse until the legs look like rounded

sticks. In the combined form, equino-varus, there is the drawing up of the heel in addition to the condition described.

Treatment.—The earlier treatment is resorted to, the more satisfactory will be the result. Even in the first week, if the deformity is noticed so soon. The results of frequent manipulation, attempting the conversion of a supinated and adducted member into a pronated and abducted one is very satisfactory. I know of nothing more satisfying in the whole realm of surgery than to cure a case of marked talipes varus and it can be done almost without exception in a few weeks by proper manipulations during the early weeks of infancy. The manipulations should be assisted by bandages, and even plasters. In older children forcible straightening, either with or without tenotomy, and plaster casts in rather an exaggerated normal position, gives the best results.

Talipes Calcaneus.—In this deformity there is an abnormal flexion of the foot upon the leg, the sole of the foot looking forwards and the patient walking upon the heel.

Causes.—The causes in order of frequency are, first, congenital defect; second, paralysis; third, traumatism, resulting either in rupture of the tendo achillis or cicatricial contractions on the front of the leg or foot.

Symptoms and Diagnosis.—These are self-evident and need no description. The differentiation as to cause only is of import.

Pathology.—The changes are those of position rather than of form. There is usually marked atro-

phy of the muscles of the calf, which allows the flexors of the foot to draw the toes up and the plantar muscles draw the calcaneum forward and down and thus increase the arch of the foot.

Treatment.—This should be directed to raising the heel and depressing the apex of the foot. The congenital variety may be treated by splints or plaster casting before patient learns to walk. When children are older and walk, elastic traction from a spur projecting from the heel to a band around the calf of the leg would act as a tendo achillis. Operative measures, such as shortening the tendo achillis and of suturing this cut tendon to the severed tendons of the peronei muscles, have been done.

Talipes valgus.—In this deformity the foot is everted or abducted. The inner border looks down, the outer up and the plantar surface outward.

Causes.—This form is rarely congenital, and when so found is almost invariably combined with calcaneus, making talipes calcaneo-valgus. The acquired form is usually either due to rhachitic softening of the bones, which sink down under pressure—it is often associated with genu valgum—or to *prolonged standing* in those not muscularly strong. The age usually is enough to differentiate.

Symptoms and Diagnosis.—These are flattening of the arch of the foot, especially of the inner border, the heel projects posteriorly and the external border is cast upward, the sole along it scarcely touching the floor. The inner border is somewhat irregular, owing to the prominence of the astragalus and scaphoid in their twisted position. You will often see suddenly

acquired cases of flat foot following prolonged walks or dances. These cases are as a rule very painful. The pain may be due to a strain of the ligaments or to a periostitis or arthritis. If young people complain of being easily tired upon walking or standing and especially if pains in the feet are frequent, always look out for this deformity and take an imprint of the foot. An early diagnosis in the acquired form is necessary to successful treatment.

Pathology.—The changes are rather in relationship of bones and joints than in bone changes. The key-note to pathology and treatment is a yielding of the calcaneo-scaphoid ligament, which is a *sling* ligament of the astragalus. This support being gone, the astragalus and scaphoid are forced in and down and so twisted that the inner borders are inclined to be the resting parts of the foot. The astragalus seems to have slipped off the calcaneum, the fibula resting upon the calcaneum and forming part of the joint. The mobility of the joints are markedly interfered with.

Treatment.—*Preventive* treatment following early recognition is the best. In rhachitic cases they can at least be stopped without further deformity, and often benefited. Well developed cases in children can be forcibly corrected and plaster casts applied with hope of lessening the deformity, but in adults a well developed case is all but hopeless unless some operation on the bones will be of service. Wedge-shaped osteotomy of astragalus is recommended, and establishing osseous ankylosis of the astragalo-scaphoid articulation is also spoken of. These opera-

tions have not been of sufficient frequency to warrant a good prognosis, but where mechanical measures fail, an attempt may be made. The steel or leather support made and attached to the inside of the shoe so as to support the arch of the foot is the only satisfactory mechanical treatment. The accurate measurement is best secured by a plaster of Paris model.

CONTRACTURES AND ANKYLOSES.—Ankylosis means partial or complete pathological fixation of a joint. Ankylosis may be fibrous, bony, or intra or extra articular.

Causes.—Ankylosis is, in most cases, the result of inflammation, in a few is due to impaired nutrition, and in still fewer to cicatricial contractions during the healing of the soft parts and to fractures into joints. Fibrous ankylosis may be due to adherent fibrous deposits in an inflamed synovial membrane; to erosion of cartilage and fibrous adhesion of bony surfaces, or to an inflammatory softening and subsequent fibrous infiltration of the capsule, the ligaments, and the tendons about a joint. Bony ankylosis may result from osseous deposits in fibrous tissue, but is more common as the result of fractures into joints or direct union of the bones entering into the joint formations after the ulceration or absorption of the encrusting cartilage.

Symptoms.—Rigidity of a joint that is not a manifestation of hysteria or is not caused by muscular spasm on account of pain is the obvious sign of ankylosis. The differentiation between the fibrous and bony forms is not always easy without the employment of an anæsthetic. In the fibrous form there is

some movement, though it may be slight, usually a little pain, and muscular contractility accompanying motion. In the bony form there is no movement, no pain, and absolutely flaccid muscles.

Treatment.—The treatment will, of course, vary with the nature of the disease causing the rigidity. In fibrous ankylosis, as the result of a simple inflammation which has subsided, the patient may be anæsthetized and the adhesions forcibly broken up. Passive movements and massage of the joint being daily and energetically used until the patient can make active movements serve a better purpose. These measures, preceded by a hot bath or steaming, may be sufficient without the forcible rupture of the adhesions in moderately rigid joints.

When fibrous ankylosis has resulted from an infective inflammation, as a tuberculosis or pyemic synovitis or arthritis, the possibility of exciting favorable conditions for the development of latent germs should always be borne in mind. It should never be done while any signs of inflammation still exist, and seldom earlier than three or even six months after all evidence of inflammation has subsided. The forcible rupture of fibrous bands is not entirely free from other dangers, especially in those cases where there are marked extra-articular deposits about the tendons, nerves, and ligaments. To avoid the danger of rupturing blood-vessels and nerves forcible movement should always be first exercised in a direction which relaxes these structures—*i. e.*, flexion. Tenotomy may be considered, and some surgeons advise the dissecting out of adherent tendons. Neither method

will be frequently called for. The muscles moving the joint, if markedly atrophied, must be treated by massage and electricity before the operation, so as to improve their nutrition and render them capable of doing the work expected of them. Nor should such measures be discontinued for a considerable time afterward if the best obtainable results are expected.

In bony ankylosis, if the limb be in good position, no treatment is called for, as this result is the best the conditions allow. If, for instance, the elbow is flexed at right angles, or a trifle less, it should not be interfered with; if extended, excision is called for. If the knee be fixed in a flexed position and the ankylosis be bony, it demands a wedge-shaped excision and fixation in the extended position, or an osteotomy of the lower part of the femoral shaft. Osteotomy below the trochanter is the most satisfactory operation for ankylosis of the hip inflexion.

GENU VALGUM AND GENU VARUM.—Genu valgum is a deformity in which the knee deviates from the normal line of the leg inward. It is commonly known as knock-knee.

Causes.—Rhachitis is the cause of most of the cases of genu valgum, whether they occur in infancy or in childhood, but occasionally cases are due to paralysis, traumatism, or are secondary to knee-joint disease. In cases occurring in young men, occupation plays an important role, standing in faulty positions and bearing the pressure upon the external part of the knee.

Symptoms.—There may be some pain on the inner side of the knee and indisposition to stand before deformity occurs. The inward position of the knee

and the outward projection of the feet, the leg making quite an angle with the thigh opening outward, are characteristic. The deformity may be of one or both legs, and is greatest in the extended position. It is quite characteristic of genu valgum that the deformity disappears upon the complete flexion of the knee joint. This is readily explained by the fact that the posterior plane of the articular surface of the femur is unchanged. In extreme cases the legs cross, forming an X. The general or subjective symptoms are those of muscular weakness and general malnutrition in infants. In older people the patients may be entirely well.

Pathology.—The change is unquestionably in the *bones*, and the latest authorities are almost uniformly of the opinion that the greatest change is the obliquity of the attachment of the diaphysis with the epiphysis of the femur. The appearance would at once indicate a hypertrophy of the inner condyle of the femur, and occasionally this change has been demonstrated. Once started in this way of development, the irregular pressure from the superimposed weight would perpetuate and increase the deformity and cause atrophy of the articulating cartilages on the external side of the joint and hypertrophy of those on the internal side. The affected bones are abnormally soft and the epiphyseal ends enlarged and broadened.

Treatment.—The tendency is towards increase in the degree of deformity, only exceptional cases, and those in very young children, showing a disposition to become rectified without treatment. The progressive nature is continuous up to the twentieth year,

the time when the epiphysis and diaphysis become united, and at this time, the bones being consolidated, the deformity becomes permanent. The treatment is most effective the earlier it is instituted. In infants operative measures are rarely called for in private practice where the patients can have your individual care. Gradual manual correction and massage give the best results. Forcible straightening should never be done in this deformity, as the external lateral ligament is apt to be seriously injured. In patients unwilling to submit to operative treatment it is best to use elastic traction by means of a long external splint fastened firmly at the ankle and at the pelvis and the traction made at the knee-joint. The pressure is thus removed from the external condyle, which is allowed to grow. A double splint, connected by a cross-piece at the bottom and firmly fastened at the waist and ankle, is suitable where both legs are involved. For a description of the many steel instruments devised for the correction of this deformity, a glance at the cuts in surgical text-books will tell more than a word picture. Many of them are excellent, but expensive, and no more satisfactory in their effects than the more simple methods already described, except that patients may be up and about. Where instruments fail or where the deformity is too great for gradual correction, and especially in those cases where the bone is sclerosed, osteotomy, either linear or wedge-shaped, is the proper treatment. There are many methods, but for most cases the linear osteotomy of the lower part of the shaft of the femur through an external inch incision is sufficient.

Genu varum is a deformity in which the knees deviate outward from the normal line of the leg. The deformity is scarcely ever in the joint itself, but is due to a bending of the femur or tibia, or both.

Causes.—The cause is in most cases rhachitis, the bones simply showing an increase in their normal curves due to the superimposed weight.

Symptoms.—The symptoms are all objective. Genu varum of one side with genu valgum of the other, or an anterior and somewhat angular curvature of the tibia, may be added, making an extremely difficult and awkward gait in walking.

Pathology.—The anatomical changes are those already described in rhachitis, and differ in different cases, depending upon whether the femur or the tibia is mostly involved. When the femur, you may note a gradual curve in the full length of the bone, but most commonly the change is in its lower part, the line of the knee-joint extending obliquely from within down and out, showing a development at the expense of the internal condyle due to irregularity in the development at the epiphyseal cartilage. When the tibia only is involved, the change is generally greatest at its upper third, but in severe cases extends for its whole length. In either case the joint structures are interfered with, the internal ligaments contracted and tense, and the external ones stretched and thinned.

Treatment.—When first noticed in children beginning to walk, preventive measures while the child is undergoing systematic general treatment is very satisfactory. Keep them off their feet to overcome the

effects of pressure. In mild cases in the very young, manipulation and massage is sufficient. Later, or in more evident cases, manual correction and fixation are called for. Personally I am opposed to the many forms of apparatus where simple means are so effective. As a means of gradually overcoming the deformity nothing answers better than a well padded internal splint firmly fixed well above and below the knee and the traction of an elastic or semi-elastic bandage used to straighten the bent bones. Forcible straightening under anæsthesia and retention by plaster casting is my favorite method of dealing with these cases where the rhachitic process is not cured and the bones markedly sclerosed. Protection of the ligaments of the knee and hip is imperative during the operation. The deformity, unless great, can usually be corrected in one sitting, a cast of sufficient firmness to prevent recurrence applied and allowed to remain for four to six weeks if no indications arise for removal. Meanwhile energetic remedial measures for rhachitic tendencies should be carried out. In markedly sclerotic cases linear osteotomy of the tibia, preferably with a chisel, should be performed and the parts dressed in splints (suitable for a simple fracture) after careful reduction of the deformity. The section would be of course on the inner side. When you have rhachitic curvatures of the diaphysis, either in addition to or separate from these deformities of the knee-joints, the treatment is much the same. The most common is the anterior and angular curve of the tibia in its lower third. This makes an extremely ugly and awkward deformity and ne-

cessitates an acquired flat foot, that the patient may walk at all. This condition may usually be corrected by the hands under anæsthesia and suitable splints applied in young children. After sclerosis has taken place, either linear or wedge-shaped osteotomy is necessary. One can, as a rule, promise good result by operative measures, but where both limbs are involved it is better to do the operations at separate times, as there is some danger of fat embolism and death. The apparatuses for the mechanical correction of this form of deformity are unsatisfactory. The deviations of the femur shaft are not open to treatment, unless so severe as to render the patient helpless, then the osteotomy may be undertaken. As the patient grows these angularities sometimes disappear even without treatment, but Nature is not a good surgeon, and it is better to advise mechanical measures early rather than to wait for uncertainties.

CHAPTER XV.

STATISTICS.

BY GEORGE B. PECK, M. D., PROVIDENCE, R. I.

In General.—In order to determine accurately the benefit derived by children from medicaments administered homœopathically rather than antipathically or allopathically, necessitates the comparison of records covering a considerable number of years. Moreover, the institutions wherein the various diseases occurred should have been subject to identical climatic and hygienic conditions, and citations from their reports should embrace identical periods of time. None of these conditions have been fulfilled in the following comparisons, because it has been simply impossible to obtain on demand what was desired and what may hereafter be secured.

The Protestant Half Orphan Asylum in New York City contributes exact statistics covering a little more than thirty-one years, those from 1842 to 1852 having been recorded by Drs. Clark Wright and B. F. Bowers, and those from 1874 almost to the present moment by Dr. A. M. Woodward. The number of deaths and their causes during the intervening twenty-two years have been noted in the annual reports of

the Asylum, but as no detail of the cases of illness is known to exist, the information that has been transmitted is comparatively useless. The Providence (R. I.) Children's Friend Society has registered all serious and epidemic cases that have occurred at its home (popularly known as the "Orphan Shelter"), on Tobey street, for the last twenty-three years. Upon the testimony of these two institutions we must perforce rest our case at least for the present.

Diphtheria is unquestionably the most serious disorder that prevails among children. The Asylum reports twelve cases without fatal result in the first decade; none have occurred during the present administration. The Shelter reports 102 cases with three deaths, a mortality of 2.94 per cent. One epidemic of forty cases was cared for without loss by Emily Metcalf Thurber, M. D., admitted to the Institute at its last session. Her success led professional rivals to question her diagnosis, so she invited Charles Value Chapin, M. D., superintendent of health, to inspect the cases. Her vindication was absolute and complete. A later epidemic of thirty-six cases was treated by Henry Mortimer Sanger, M. D., also a new member of the Institute. The diagnosis in each of these was confirmed by the culture test. Strickler states that the Homœopaths of sixteen cities reported in 1890–92 a loss of 347 diphtheria patients out of 1,141, or 30.41 per cent, while the Allopaths lost 2,996 out of 8,765, or 34.07 per cent; also, that in 1893 the Homœopaths of eleven cities lost 110 cases out of 376, or 29.26 per cent, while the Allo-

paths lost 965 out of 2,917, or 33.09 per cent. The most potent cause of this great discrepancy between the institutional and the general death-rate is that many physicians *will not* subject their patrons to the annoyance of semi-quarantine unless the possibility of serious consequences is plainly manifest.

Scarlatina.—Dreaded almost as much as the preceding disorder is scarlatina. The Asylum reports 128 cases and six deaths, 4.69 per cent. Of these, fifty-eight were in the first decade when five were lost through ensuing dropsy, and seventy were under the charge of Dr. Woodward, who saved all but one. The Shelter has had 114 cases, with six deaths also, 5.26 per cent. There were four distinct epidemics; one of thirty-three cases treated by the late Courtland Hoppin, a member of the Institute, better known, however, as an artist than as a practitioner, who lost three; another of eleven cases, with one death; a third of thirteen, with no death; and the fourth of twenty-two, with one death. Strickler states that in seventeen cities from 1890 to 1892 the Homœopaths reported a loss of 157 out of 3,039, or 5.16 per cent, while the Allopaths lost 1,466 out of 17,340, or 8.45 per cent, and in 1893 in ten cities the Homœopaths reported 693 cases, with 30 deaths, 4.33 per cent, while the Allopaths had 4,056 cases, with 343 deaths, 8.46 per cent. Moreover, the following eminent Allopathic authorities report cases as follows: Fleishmann, 472 in persons under twelve, with 145 deaths, 30.72 per cent; Kraus, 232 under twelve, with 43 deaths, 18.53 per cent; Voit, 280 cases under sixteen,

with 35 deaths, 12.50 per cent; Roset, 287, with 50 deaths, 17.43 per cent; Resigger, 274 under fifteen, with 44 deaths, 16.06 per cent. Still farther in the Manchester (England) Children's Hospital the mortality for ten years, 1877–87, was 11.8 per cent, while Collie states that in 10,000 cases of all ages the death rate was 12.5 per cent, and between three and four 25 per cent. These figures, considered from a *Regular* standpoint, confirm the demonstration effected a score of years ago by the translation and publication of Ziemssen's Cyclopædia, that in the little matter of restoring the sick to health American common sense is far more efficient than German scholasticism. During the intervening period the writer has failed to observe a single untoward result of scarlatina that could not be traced to a particular manifestation of neglect on the part of the person entrusted with the care of the case.

Measles.—Of measles the New York Asylum reports 342 cases, with three deaths (two from pneumonia and one from acute laryngeal phthisis), a rate of 0.87 per cent, while the Shelter had 129 cases, with no pronounced evil result. Combining, we have 471, with a loss of three, 0.64 per cent. This is precisely the Homœopathic death-rate given by Strickler for eight cities in 1890, 1891, and 1892, where only seven were lost out of 1,098 cases, while the Allopathic loss for the same time and cities was 297 out of 8,594, or 3.43 per cent. The climatic conditions of 1893, however, were unfavorable for those suffering from this disorder, for in nine cities the Homœopaths lost four-

teen out of 388 cases, or 3.67, while the Allopaths lost 302 out of 4,385, or 6.89 per cent.

Typhoid Fever.—The Shelter reports eleven cases of typhoid fever, with one death, a rate of 9.09 per cent. Starr places the Allopathic loss at from 5 per cent to 14 per cent, according to the epidemic. In the Asylum there were ninety-eight cases of typhus fever prior to 1852, of which four were lost, 4.09 per cent. The agents of the decedents are unknown. Fifteen years and more later, 1865-70, the London Fever Hospital had 734 cases in persons under ten years, with a loss of twenty-five, or 3.41 per cent, but in 1871 had ninety-five cases under fourteen, with but a single death, 1.05 per cent. The London Eastern Hospitals (fever) had 191 cases, 1871–80, in persons under fourteen, with but two deaths, also 1.05 per cent. The Southeastern had twenty-six cases under ten years without loss, 1880–87, while the Southwestern, 1871–80, had 308 cases below fourteen, losing twelve, or 3.89 per cent. To our senior practitioners these figures will prove strong reminders of the rapid advance in sanitary science during the latter half of the ninteenth century.

Asiatic cholera attacked forty-two inmates of the Asylum during the same decadence and removed ten, 23.81 per cent. Allopathic mortality is given as from 20 per cent to 80 per cent, with an average of 50 per cent. Naturally **cholerine** and **diarrhœa** prevailed, to the extent of 207 cases, none of which was fatal. **Variola** also called on forty-six persons about that time, but removed none. Nineteen were classified as

small-pox and twenty-seven as varioloid. The disorder had previously dropped around in 1837, when it was under Allopathic control and removed two of the fifteen children it interviewed, 13.33 per cent.

At divers times there have been in the Asylum eighty-five cases of **pneumonia,** with two deaths, a loss of 2.35 per cent. Baginsky observed sixty cases, one-half in children under two years of age, four of which, 6.67 per cent, were fatal and nine were not followed. Of **dysentery** there were 158 cases and one death, 0.63 per cent. **Whooping-cough** abode with 181 children for a time, but removed none; the Allopathic loss is said to be from 3 per cent to 15 per cent. **Rheumatism** removed one out of twenty-four subjects, 4.17 per cent, and **croup** one out of forty-one, 2.39. Moreover 34 8cases of **mumps,** fifty-three of **intermittent fever,** forty-two of **erysipelas,** and forty of **quinsy** were treated without serious result.

It may be interesting to note that in 1838 **ophthalmia** broke out in the Asylum, then under Allopathic control. It proved an unconquerable scourge to the *Regular* attendant, and his eminent counsel, Dr. Wright, was called in to treat this disorder alone, 255 cases of which came under his care. As he was uniformly successful, he was asked to prescribe for certain skin diseases that had been raging for some years also. These he likewise exterminated. He was then asked to grapple with some other stubborn disorder, but believing the superiority of Homœopathy had been sufficiently established, promptly refused unless the entire charge of the sick was confided to him. The

management felt compelled by his exhibit to accept his terms, and the institution has remained in the care of the *New School* ever since.

For additional facts concerning Homœopathic cures see Transactions of the American Institute of Homœopathy for 1896.

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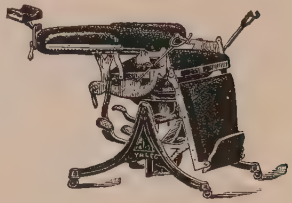

Fig. XVII.—Dorsal Position.

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